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ART. I.—*Letters from Europe.* By JAMES C. CROSS, M. D., late Professor of the Institutes of Medicine in Transylvania University.

PARIS, December, 1845.

GENTLEMEN:

Syphilitic Sarcocele. (Clinic of M. Ricord.)—Syphilitic Sarcocele—Syphilitic Testicle has been the object of much investigation and study, but these do not remount to a very remote period. Astruc had a glimpse of its nature, but he confounded it with blennorrhagic orchitis; Bell was perfectly familiar with it, but Hunter has not even mentioned it. Before the time of Sir Astley Cooper, and even more recently, that of Dupuytren, a satisfactory description of it is not to be found. Syphilitic sarcocele, to which the name of syphilitic albuginitis is still applied ,and with reason, for the white tissues are those that are first attacked, is one of the most common and early of the occurrences that are observed in the tertiary period of constitutional pox, and generally attacks one side only.

However, it is not uncommon to see it invade both, either simultaneously or successively. Rarely ever is its existence announced by such symptoms as lead to the apprehension that the testicle will be lost; nevertheless, sometimes in some very rare cases we meet severe, piercing pains, most commonly during the night, in the lumbar region. The patients then complain of a sensation of painful pressure near the kidneys: it seems to them, they say, that a piercing instrument was thrust into the flesh. In some cases the pains assume the character of those that are syphilitic, being experienced during the night, but it is very rare that we find such prelusive symptoms. Generally patients are wholly ignorant of the precise period at which their disease commenced, and commonly it is accident that causes its existence to be made known to them. Sometimes it, however, happens that individuals experience in the testicle a sensation of uneasiness, malaise and dull pain, which directs attention to the part before any appreciable change can be discovered. Commonly the disease commences with a material alteration in the organ diseased without there having been experienced either lumbar or testicular pains. When we attend to the gradual development of the disease the following is what is observed. We find upon a point of the body of the testicle, for it is in the body of the testicle itself that the disease generally commences, and it is but a small portion of the body that it occupies, one or more small indurated nodules;—when the organ is touched carefully a point that resists pressure is felt—which has lost its suppleness—that normal elasticity which is preserved in other parts of the organ. As the disease progresses the resisting points are gradually extended very much in the manner that the bones of the cranium are ossified. In many cases the induration extends in the form of circles, and these in spreading become confounded with one another until ultimately the whole testicle is involved. According as the organ is invaded it loses its elasticity and hardens and concretes. The only difference between what takes place in this affection and inflammation of the testicle consists in the slow

and chronic manner of the concretion in the former, while all the phenomena that mark its progress are independent of inflammation. In typical and regular cases the epididymis is not involved in the diseased action, and for a considerable time during the progress of the disease it may be readily enough distinguished from the body of the testicle which progressively hardens and either presents its normal volume or becomes hypertrophied. One of the characteristics of syphilitic testicle is that it preserves its normal size, and this circumstance which was first signalised by M. Ricord, has induced some writers to believe that this organ was becoming atrophied. There takes place here a phenomenon analogous to that which is observed in those cases of cancer known under the name of *cancer rentrant—cancer concentrique.* In this kind of degeneration where it attacks the breast for example, it imparts to the tissues a horny hardness and causes the nipple to be retracted within them. The same mechanism may be observed in this disease, but it should be remarked that most frequently as the alteration progresses hypertrophy of the testicle supervenes and the organ doubles or triples its ordinary volume. But even in those cases where this takes place the development of the organ is confined within certain limits, while some degenerations of the testicle impart to it a most enormous magnitude. In this disease the augmentation of volume has limits, and this it is important to know, as it will be found essential to a precise diagnosis. When there is an increase in the size of the tumor the augmentation is commonly uniform. This is seen when the albuginitis becomes general; the organ preserves its pyriform appearance—the large extremity being below and the summit more or less elongated extends in the direction of the testicular cord. Syphilitic testicle is not knobbed or knotty—its hypertrophy is regular, and should any inequalities in its surface be detected it will be observed that they present a kind of regularity—they are arranged in zones and not mammillated. When the tumor has acquired three or four times the normal volume of the testicle, if it is examined with attention, the epididymis can be no longer

recognized, but will present a perfectly uniform appearance. For a long time it was believed that the epididymis was involved in the disease and participated in the alteration which the body of the organ itself experienced. But this is a mistake, for pathological anatomy has shown that it is perfectly healthy and only flattened against the organ. The tissue which envelopes the epididymis is stretched and appropriated by the progressively augmenting testicle and is thus flattened and spread out upon the body of the testicle. Not only does the epididymis remain unaffected by the disease, but the deferant canal also. This is likewise a sign of the highest diagnostic importance, for if there is a degeneration either of the epididymis or the cord we have satisfactory assurance that there is some complication. The tissues of the cord remain perfectly healthy, and the disease may exist in its most exasperated form—the tumor may attain its fullest development without any change in the epididymis and deferant canal—without pain either in the organ or its vicinity, whether the testicle be subjected to pressure or not.

In many patients when the disease is fully developed, there is observed a circumstance that cannot but be regarded as singular, and which is that the exquisite sensibility of the testicle in the normal state is lost. Often the tumor when it becomes voluminous occasions tractant pain in the cord itself, and from which results respondent pain in those parts that sympathise with the testicle. It is maintained by M. Ricord that the pains are not symptomatic, but sympathetic. During the whole course of the affection up to this point the tumor is hard and solid, and when pressed imparts to the fingers the sensation of inelastic fibro-cartilaginous tissues. There is no change in the skin—its color is normal—its temperature nearly natural, and it is mobile, not having formed any subjacent adhesions. In a few rare instances we see a slight enlargement of the veins of the scrotum. We should here speak of a complication which is present sometimes and presents various degrees of development;—allusion is made to hydrocele of the tunica vaginalis. It is not very usual to see this

affection complicated with a hydrocele that presents all the characteristics of symptomatic hydrocele. Besides, there is no febrile reaction or even functional disorder except what may be in the diseased organ, and there, as the affection progresses and increases in depth, the spermatic fluid diminishes in quantity and ultimately fails to be secreted altogether. This is more especially the case when both testicles are simultaneously attacked, and then the faculty of erection diminishes, and is at last completely lost. The physical properties of the semen in regard to quantity and consistence undergo very sensible changes. These changes are progressive, and when they are studied with the microscope the following is the order in which they take place:—the spermatic animalcules first disappear; then the spermatic crystals, and finally the result of the testicular secretion becomes nothing more than a transparent fluid, without consistence, and bearing a very strong resemblance to pure water. The progress of syphilitic sarcocele is slow—essentially slow and indolent—it may not only last many months, but even one, two, or three years. What is very remarkable is that in uncomplicated cases, and it may be laid down as a law to which there is no exception, that syphilitic sarcocele never suppurates—it has no tendency to suppuration, and never exceeds a certain volume. When it has arrived at a certain point, nearly the same in all cases, resolution commences, and the course of the affection is directly the reverse of that which has been described. This is sometimes the result of treatment, and sometimes that of a spontaneous effort of the economy. To see the organ gradually restored to its natural size is at first a source of great satisfaction to those afflicted with this disorder, but this is of short duration, for they are soon frightened to see the diminution in volume obstinately persisting, and this continues until the organ disappears entirely.

Organogenie.—At a recent meeting of the *Academy of Sciences*, M. Coste read an article entitled—*Rescherches sur les premieres modifications de la matiere organique, ou sur la for-*

mation des cellules. We are told that if the tissues of animals are studied in the germ we shall see that they are in great part composed of cells as are those of vegetables. From the moment that it was demonstrated that the cell constituted the base of all the organised tissues, that it is, as it were, their integral molecule, the greatest importance was attached to the mechanism of its formation. M. De Mirbel was the first to institute an inquiry into the manner in which the cell proceeds from the cambium to form its parietes at the expense of this mucilage. When he cut the extremity of a root of the date-tree, he saw in the mucilaginous substance discharged a multitude of irregularly spheroidal masses that evidently resulted from the concentration of the mucilage, which in each condensed mass, exhibited already the first rudiments of a proximate organization. In the centre of each mass there is soon formed a cavity that gradually increases in size by pressing upon the matter by which it is surrounded and which serves to limit it. This matter thus pressed upon is attenuated into the form of a membrane by the dilatation of the central cavity, and ends by representing a hollow sphere which is nothing more than a vesicle. To this theory, M. Coste opposed that of Schleiden, applied by Schwann to the organization of animals, and which is merely a generalization of the theory of Purkinje on the development of the egg in the ovary. Having recognized that the germinative vesicle was the part of the egg which, from the commencement has the greatest proportional development, Purkinje considered it as a centre around which is successively deposited the vitellus and vitelline membrane, which coagulating in its turn at the periphery of the yolk, completed the ovarian egg. This successive encasement of the concentric parts having appeared to Schleiden and Schwann as the most simple means that could be conceived of the formation of the vesicular parietes, they constructed upon it a general theory to explain the development of the vesicle. Before we pronounce upon the respective merits of these theories, let us hear what M. Coste has to say

on the subject, as he has promised soon to give us his own views which we doubt not will at least assume to be novel.

Etiology of Goitre.—On the same occasion, M. Guyen, Chief Surgeon of the Army in Africa, made a communication on the causes of Goitre. He contends that it cannot with truth be referred to a low temperature—to the nature of the water, or the humidity of the atmosphere. He alleges that the causes assigned are wholly insufficient to explain the production of a disease that prevails in so many places, and which everywhere exhibits the same characteristics. The cause of Goitre, according to M. Guyen, is the imperfect and insufficient exposure to the sun of those localities in which it prevails. In support of this opinion he quotes the observations made by Fodere, that Goitre is not found in elevated situations nor in open plains, but in the deep and narrow gorges of mountains. He explains the presence of this disease in Lyons by referring it to the fact, that that city does not enjoy the benefit of the rays of the rising sun in consequence of a mountain in its vicinity, which runs from the North to the South. Although it may be true that Goitre is prevalent in localities secluded from the full power of the sun, and even more prevalent in such localities than in those differently situated, the theory of M. Guyen is far from satisfactory, for Goitre is common on the Andes—in countries perfectly dry and exposed in the fullest extent to the sun.

Aneurism cured by Galvano-Puncture.—M Petrequin has made a publication on this subject, of which the following is a summary analysis. The author states that when we consider the danger which an operation for aneurism involves, any safe means by which we may dispense with it, must be considered a great conquest. The following are some of the results of his analysis of the operations that have been performed for this disease, when affecting the principal arteries. He thinks, one-sixth at least, of those operated on for aneurism of the crural and primitive carotid die; of the external

iliac, one-fourth; of axillary and subclavian, one-half; of the branches of the brachio-cephalic trunk, two-thirds, &c. This being the case, we may form some idea of the value of a process not only more simple, but one devoid of danger. The application of electricity, says M. Petrequin, has been suggested, but no advantage has resulted from it, and all that the science furnishes on the subject is to be found embodied in the following lines written by M. M. Marjolin and Berard, in 1833. "They have endeavored to induce a coagulation of the blood in the sac by electricity transmitted through needles plunged into the tumor. *This idea*, which originated with M. Pravaz, has not yet, to our knowledge, been reduced to practice." To satisfy himself on the subject, Petrequin addressed Pravaz, from whom he learned that it was nothing more than a speculative thought which researches on another subject had inspired, and that he had never performed experiments on man or animals to test its practicability. Petrequin experimented upon human blood immediately upon its abstraction, and the results obtained were so satisfactory as to induce him at once to make application of it to the cure of aneurism. The case in which it was first employed and with success, was a traumatic aneurism of the temporal artery of the size of an almond, of a soft consistence and slightly sensible on pressure. Every precaution was taken to determine the precise nature of the tumor, and that it was aneurismal there could not be the least doubt. In the presence of many persons two fine, sharp steel pins were plunged into the tumor about four-fifths of an inch, in such a manner as to cross at right angles. A communication was established between the heads of the pins and the poles of a pile. The first instant of contact produced a shock and severe pain which went on increasing as the galvanism was augmented, until they became so intense as to render it necessary to suspend the sitting. The duration of the galvano-puncture lasted about 10 or 12 minutes, and in that time the direction of the galvanic current was changed three times. During the operation the pulsations progressively diminished, until at length they ceased entirely. The pul-

sating aneurism was replaced by a solid and hard tumor, which at the expiration of ten days, was being gradually absorbed. This cure was considered radical. Now, M. Petrequin thought that he had fully established the priority of his claim to having first practised galvano-puncture for aneurism when he consulted Pravaz and obtained from him the assurance that he had never tried it; but he was mistaken. At a meeting of the *Academy of Sciences*, on the 8th inst., we were surprised, if not amused, to find that a letter had been received from Mr. B. Phillips, of London, who claims over M. Petrequin, of Lyons, the priority of the employment of galvano-puncture in cases of aneurism. The profession will doubtless rejoice to learn that they are not disputing over the skin of the bear before the bear is killed.

Chemistry.—At the meeting of the *Academy of Sciences*, on the 8th inst., we heard, with great interest, a communication read by M. Dumas, on behalf of M. Gehrarde, Professor of the Faculty of Sciences of Montpelier. This article treated of one of the highest and most difficult questions of modern chemistry, and as it professed to have for its object the enlightenment of a point that had engaged the close attention of the ablest men who have made this branch of learning a subject of special study, it could not fail to inspire the greatest interest. His experiments, a detailed account of which was embodied in the communication made by M. Dumas, were instituted to ascertain the atomic weight of Chlorine. When different bodies combine it is admitted that they are composed of molecules or atoms. Chemists have determined the weight of these molecules and have found that they vary in the different elementary bodies, and that the atomic weights of all bodies are exact multiples of hydrogen. That the atomic weight of carbon is exactly six times; that of azote fourteen times; that of sulphur sixteen times that of hydrogen; and now M. Gehrarde asserts the atomic weight of Chlorine is exactly thirty-six times that of hydrogen. This being the case, it is satisfactorily proved that these weights are not arbitrary, but

regulated upon a principle that is fixed and universal. Protracted and very carefully instituted researches had been prosecuted by M. Dumas to establish this fact, and he succeeded in showing that all the bodies that had been studied, with the exception of Chlorine, were subordinate to it. This exception, however, was fundamental and threatened the overthrow of the opinion maintained by M. Dumas and his followers, more especially as it rested upon the experiments of such men as Berzelius, Marignac and Pelouze, who always decided its atomic weight to be 35.3 or 35.5, that is to say, a fractional number being neither 35 nor 36. M. Gehrarde, unappalled by the difficulty of the subject, and unalarmed at the danger of a contest with names and researches that are justly honored as classical, examined the processes employed by his illustrious predecessors, and detected a source of error which had escaped their attention. His experiments, which are regarded as decisive, makes the atomic weight of Chlorine 36, and is therefore the exact multiple of the atomic weight of hydrogen. The problem may consequently be considered as solved, and the opinion maintained by M. Dumas and his followers, seems destined to triumph over that of Berzelius, which has so long prevailed

Amphioxus.—Some zoologists apply their exclusive attention to the completion of the great catalogue of living beings, and to point out the means by which the species may be distinguished from one another, while others, curious to know the secrets of natnre, have devoted themselves more particularly to anatomical and physiological researches—they have sought to discover how life, considered under the two-fold relation of its manifestations and instruments, is modified in the different animals, and they have therefore directed their observations especially to those points which seem best calculated to reflect light upon the laws of animal organization. Like the cavern of Rasselas, which opens to the most beautiful landscapes, a future, brilliant with the most magnificent discoveries awaits this *ecole physiologique*, of which, in France,

Milne Edwards is the distinguished representative, and to which M. De Quatrefages belongs, to whose researches on the *Amphioxus* we would direct attention. The *Amphioxus* had been already seen by the celebrated Pallas, but having at his disposition animals only which were preserved in alcohol, he took it for a *Limas.* It was found by M. Costa, at Naples, and judging from its external characteristics only, he decided it to be a fish. The fact, however, is that the *Amphioxus* is scarce more of a fish than a limas—it scarcely deserves to be placed in this great branch of the vertebrata, and yet it is impossible to class it amongst the invertebrata. It has, properly speaking, no brain—the cranium is wholly wanting—it has no heart—its blood is white and devoid of the globules so characteristic of the superior animals. To give an account of the relations which connect the whimsical organisation of the Amphioxus with the rest of the animal creation, it seems necessary to admit the truth of some of those ideas which modern science appears daily to render more and more reasonable, but which are obstinately rejected by many able and learned men. In other words, we must admit that the *Amphioxus* is a degenerated vertebral—that while its anatomical structure is simplified it still preserves some of the characteristics of the animals of this type. The characters which persist are found in the vertebræ before they become fully developed, and therefore, if the expression may be used, it may in this respect be denominated a permanent embryo. Already Muller, the great German physiologist, had made a voyage of the Baltic Sea for the express purpose of studying in the living Amphioxus this vertebral, which in so remarkable a manner differs from all others, and he published a work embodying the results of this investigation, which by naturalists is thought to posses very high interest. M. Quetrefages found the Amphioxus at Messina, not far from the famous gulph of Charybdis—he reviewed the observations of Muller—confirmed them on many points, and completed them on others. He detected the existence of several nerves that had escaped the attention of his predecessor—he has verified the existence of

real eyes, which he found deeply embedded in the substance of the tissues, and has exhibited the singular structure of what we would call the cellular tissue. We might give more details, but these are sufficient to impart a clear idea of the Amphioxus, while it cannot fail to strike the reflecting physiologists how forcibly its study illustrates how very fallible must be those general conclusions and laws that have been deduced from the study of the superior animals exclusively.

Variola modified by Vaccination.—A young man, 18 years of age, was attacked with small-pox in Bouillaud's ward, in the Hospital of Charity, after having experienced for four days only the precursory symptoms. He was vaccinated the first day by means of twelve or fifteen pricks in each arm. The variolic eruption went through its stages with great rapidity and without secondary fever. When desquamation commenced the vaccine disease which had remained in a perfectly latent state, was developed, and in its turn went through its stages with great rapidity, which demonstrated it had also experienced some modification. This remarkable fact proves that when variola attacks persons not vaccinated, vaccination is proper and may be useful if only occasionally, not only during the primary fever, but even at the commencement of the variolic eruption.

Resuscitation after submersion for half an hour.—In the *Journal de la Corse* a case is recorded with the utmost minuteness and detail of a woman who was completely resuscitated after being under water for the space of full half an hour. Of the truth of this, from the testimony adduced on the occasion, there could be but little doubt; but as the circumstances of submersion and ultimate recovery are to be found only in a political and not a medical publication we shall not trouble you with the details. The case, however, is in some degree interesting, and may excuse the propounding of some questions. If true, how did she survive through the half hour of submersion? Was it owing to a state of asphyxia which su-

pervened before falling into the water? Was it because the communication between the ventricles of the heart were not completely closed and that the circulation continued as in the fœtus in utero? Is it possible for a human being, after the establishment of extra-uterine life, to live for the space of half an hour without breathing? The case is certainly extraordinary, and, we believe, unique of its kind.

ART. II.—*An Essay on Diet in Health and Disease.* By JOHN DAWSON, M. D., of Jamestown, Ohio.

Among the many inquiries of the physician, none, perhaps, is less free from perplexity, than the one which it is the design of this paper partially to discuss.

The proper diet of man, considered either in relation to health or disease, has been, and is, to some extent at the present time, surrounded with considerable confusion. Until recently the only test to which it had been with any success subjected, was the experience of different individuals upon their own persons or upon inferior animals. It is true, that reference, in order to determine the diet most suitable, has been frequently made to the habits of those uncultivated races living in the extreme North; and also to those living in the South, in the hope that something might be elicited that would minister to a more correct understanding of the subject. As yet, however, these imagined sources of information, although invoked with considerable industry, have failed to furnish facts of any other character than those of secondary importance. Nothing has been learned from the habits of the Esquimaux, Samoiedes, &c., who live exclusively on animal food, or from the natives of torrid regions, whose diet consists almost exclusively of the cocoa-nut, the plaintain, the banana, the sago, the yam, the cassava, the maize, and the millet; nor from the *ichthyophagi*, or fish eaters of antiquity; the *hylophagi*, that fed on the young shoots of certain trees; the *elephantophagi*, who lived upon the elephant; or the *struthiophagi*, whose diet

consisted of the flesh of the ostrich, that goes to demonstrate the source from which a diet the most congenial to the moral, mental, and physical developments of man should be obtained. Surrounded as these different races and tribes have been, by a number of circumstances adequate to produce the intellectual and physical modifications by which they are distinguished, it becomes a question of no small importance, to know what that is to which their peculiarities should be attributed. The climate, the want of mental and moral culture, no less than their food, have evidently been instrumental in the production of some of the most distinguishing characteristics observed in the inhabitants residing in either of the climatic extremes. Who would say, that the small stature of the Samoiedes, their flat, round, broad face; thick lips; wide nose; little head; and black hair; together with their ignorance and superstition, are not as referable, to the frozen deserts they inhabit, which extends along the ocean forming the northern boundary of European and Asiatic Russia, as to the train-oil and flesh of the rein-deer, upon which they almost exclusively subsist? Modification, physical or intellectual, therefore, under such circumstances, we can see no propriety in attributing exclusively to food. Most likely they are the result of a combination of causes all operating together. Indeed the animal food instead of being the cause of the diminished stature, &c., of the Esquimaux, is most probably made necessary by the nature of his climate. He needs the train-oil and other articles rich in carbon and hydrogen to furnish the materials of respiration, in order to maintain the heat of the body against the intense cold with which it is surrounded; hence the food of those in the extreme north may be regarded rather as a necessary consequence of their geographical or climatic position, than as a cause of the imperfections, moral or physical, that characterize them. The same might be affirmed concerning the food of the inhabitants of Borneo and Southern Hindostan. Leibig tells us that these people live on a diet containing only from 12 to 20 per cent. of carbon, and that this is made necessary and proper by the circumstances with

which they are surrounded. Situated in an atmosphere highly rarified, and consequently more or less deficient in oxygen, and possessing a temperature but little higher than the air in which they live, they could not, it is supposed, enjoy health in any other way, than by living on the fruits in which their country abounds. The bacon and train-oil of the Laplander would be as little requisite to their comfort and health as would be his warm clothing.

The design of some things we sometimes ascertain by their construction. Cuvier was enabled to discriminate between carnivorous and herbivorous animals merely by an examination of their bones. The principle upon which his discrimination was founded, is that *each animal constitutes a whole, one systematic cycle; and that each part is exactly and invariably adapted to another, and is indicated by it.* By observing the integrity of this principle, he was enabled to classify fossil bones, arrange skeletons of individuals, species, and genera long since extinct. After being arranged, it was easy for C. to ascertain the class to which any given individual belonged; the habits, and kind of food upon which it was designed that it should subsist. Constituted with organs of motion for pursuing and overtaking prey, jaws articulated with great strength for carrying it off, teeth for tearing and dividing, claws for seizing, the animal was regarded as being carnivorous, designed by nature to live on flesh and blood. "In a word," says Cuvier, "the formation of the tooth indicates the structure of the jaw, and its kind of articulation; the structure of the shoulder bone, shows the form of the feet, just as the equation of a curve involves all its properties; and as by assuming each property separately as the base of a particular equation, we should reproduce both the ordinary equation and all its properties; so the nails and shoulder blade indicate the articulation of the jaw; the thigh bone and the other bones taken separately give the form of the tooth, or are given by it in their turn." Principles of a similar character have been applied to man in order to ascertain from his physical construction the kind of food most suitable to his nature. They show

to the satisfaction of anatomists generally that he neither belongs to the one nor to the other, to the strictly herbivorous, or to the carnivorous; but that his organization designates him as occupying a rank that is intermediate. Twenty of his teeth, although comparatively small and but little adapted to grinding, resemble those of the herbivorous, while twelve bear conformations approaching those of the carnivorous animal. In the structure of his alimentary canal the same view seems to be confirmed. He neither possesses the complicated apparatus of the herbivora, the four stomachs of the ruminantia, (*osmasum*, *abomasum*, *ventriculus*, *reticulum*), nor the simple diminished tube of the carnivora. The articulation of the lower jaw with the glenoid cavity, as well as the muscles of mastication, are so strongly marked in the two great classes of animals that it is very obvious man belongs properly to neither. He possesses not in common with the carnivora, the deep glenoid cavity with the condyle or head of the jaw bone so firmly fixed in it as to make luxation impossible without great violence; nor the shallow, loose articulation, permitting the bone to be moved extensively in all directions, such as obtains with the herbivora. Natural facts of this character, when confirmed by others derived from other sources, are certainly entitled to some consequence in fixing the relations of man to the physical universe with which he is surrounded. Entitled to the station of even a minor grade of evidence, they favor the idea, if any thing can be learned from physical organization, that he is an *omnivorous* animal, designed to derive the articles inservient to his nourishment from either of the kingdoms; and that a mixed diet consisting of articles derived from both animal and vegetable matter would come nearer meeting the indications held out by nature than any other. Additional light has recently been thrown around this subject by the labor of organic chemists. A caption perhaps as good as any other in order to offer a few thoughts on this interesting and growing branch of science is,

The Nutrient Elements of different articles of Diet.—To organic chemistry many have looked with much confidence in

the hope that something might be learned concerning the elements of nutrition that would at once settle the diversified views that have attached to the subject. For some time anterior to the labors of the organic chemists, it was suspected that the nutrient properties of all articles of diet, whether obtained from the animal or vegetable kingdom, consisted of a particular principle of a constant character. Haller, we know, supposed this to be jelly; Cullen thought it was an oily or saccharine matter; Stahl, Fordyce, Becker, and others imagined it to be a mucilage; Dumas, mucus; and Hallé regarded it as a hydro-carbonous oxide. Again, it was supposed that the organism performed the office of elaborating the peculiar principle destined for nourishment; that a change was wrought upon articles of diet by the gastric juice, under the influence of the vital force, before they could take any part in the nutritive function. The aspect of some of these views has undergone, of late, a change.

The gastric juice is now regarded as a substance in a state of metamorphosis, by the presence of which the food is merely dissolved. But the nutrient principles of the food, the organic elements subservient to nutrition are, as the ancients supposed, always the same—of a constant character, consisting of oxygen, hydrogen, carbon, and azote, arranged together in compounds denominated, in chemical nomenclature, *isomeric*, from the fact, that, although possessed of different physical properties, they have the same chemical elements united in the same proportions.

These nutritive principles, *albumen*, *fibrin*, and *casein*, as before remarked, are the same in chemical composition; and there is very good reason for supposing them to be one and the same substance. Denis succeeded in converting fibrin into albumen; that is, in giving to it the solubility and coagulability by heat which characterize the white of egg; and Mulder succeeded in showing that all three of the elements are nothing more than modifications of a certain body to which he gave the name of protein. This author found that "when animal albumen, fibrin, and casein are

dissolved in a moderately strong solution of potash, and the solution is exposed for some time to a high temperature, these substances are decomposed. The addition of acetic acid to the solution causes in all three the separation of a translucent, gelatinous precipitate, which has exactly the same characters and composition from whichever of the three substances above mentioned it has been obtained." (Liebig's Animal Chem.)

What is very striking in regard to these proximate principles is, that they possess the same composition and the same characters whether derived from the animal or the vegetable kingdom. The following tables, which may be found in Liebig, confirm this position:

ANIMAL PROXIMATE PRINCIPLES, ACCORDING TO MULDER.

	Albumen.	Fibrin.	Casein.
Carbon,	54.84	54.56	54.96
Hydrogen,	7.09	6.00	7.15
Nitrogen,	15.83	15.72	15.80
Oxygen,	21.23	22.13	21.70
Sulphur,	0.68	0.33	0.36
Phosphorus,	0.33	0.36	
	100.00	100.00	100.00

VEGETABLE PROXIMATE PRINCIPLES, ACCORDING TO JONES AND SHERER.

	Albumen.	Fibrin.	Casein.
Carbon,	55 01	54.603	34.138
Hydrogen,	7.23	7.302	7.156
Nitrogen,	15.92	15.809	15.672
Oxygen, Sulphur, Phosphorus,	21.84	22.286	23.830
	100.00	100.000	100.000

Other organic elements there are, which according to chemical and physiological researches, do not take a conspicuous part in the process of nutrition; and hence are regarded rather as elements of respiration. Among these it is the present fashion to include fats, starch, gum, the different kinds of sugar, pectine, bassorine, &c. The first great class of principles properly, perhaps, styled the elements of nutrition

contain, as we have seen, azote; and on this account are called the *nitrogenized elements of food.* Those mostly concerned in sustaining respiration are called the *non-nitrogenized elements* or *elements of respiration.*

The speculations concerning the elements of nutrition may now be supplanted by the researches of a branch of science which proposes nothing else for consideration than demonstration,—demonstration by both analysis and synthesis.—These investigations show that the nourishing principles, albumen, fibrin, and casein, whether derived from the animal or vegetable kingdom are identical; exist already formed in vegetables and in the flesh and milk of animals; that, instead of being elaborated by some mysterious process from the articles taken into the stomach, they owe their existence to an agency altogether different. Animal albumen, fibrin, and casein, therefore, differing in no respect from the proximate principles of the same name derived from vegetable substances, it is obvious that it can make no difference from which class of substances food is obtained. That derived from animal possesses every thing in common with that from vegetable substances, and both agree in composition with these elements as found in the blood; that is, the albumen and fibrin of the blood are the same, as the albumen and fibrin found in animal or vegetable food.

The proportion of Nutritious Matter in different Substances.—Diversity obtains, doubtless, in the two great kingdoms of nature in regard to the manner in which the nutritious matters are found combined with adventitious substances that take no share in the nutritive process. Vegetable proximate principles, as a general rule, are found combined with a greater proportion of the elements of respiration, and also with a greater per cent. of redundant matter, answering, perhaps, no other purpose than that of keeping the bowels distended. This, although an important, and probably indispensable circumstance in the nutrition of animals strictly herbivorous, cannot be regarded as of any great moment in the nutrition of man. All experience teaches that graminivorous animals cannot

live and thrive without *fodder*—something mixed with the food that operates mechanically in keeping the bowels and chyliferous ducts from becoming collapsed. Concerning man, whose digestive apparatus is differently constructed, this, in the present state of physiological science, cannot be so positively affirmed. He lives and thrives well on a diet containing a much less quantity of matter taking no share in the nutritive process.

Some of the results lately arrived at by *Boussingault* concerning the relative proportions of the nutrient principle found in substances usually consumed as food, are interesting. A principle well established in physiological science, and to which nothing is known to be opposed, is that increase of mass in the body, the development of its organs, and the supply of waste, are dependent upon the existence in the food of substances capable of being converted into blood; such, for example, as albumen, fibrin, and casein; the organic bodies from which fat is formed, and certain salts, particularly phosphate of lime, magnesia, and iron. From the indispensable necessity of such facts, as well as from a great number of experiments upon inferior animals, Boussingault lays it down as a general rule, concerning the proportions of nutritive matter found in different articles used as food, "*that the nutritious principles of plants and their products reside in their azotized principles; and consequently that their nutritious powers are in proportion to the quantity of azote they contain.*" Here is a table in which he contrasts the articles usually used as the food of man in reference to the azote they contain; and in explanation, says: "I have composed the following table or list of equivalents on this basis, (the proportion of azote contained) having assumed wheaten flour as the standard, and called it 100. As all herbs, roots, and leaves may be pulverized after dying, I have spoken of these articles dry under the name of meal."

Wheaten flour,	100	White-heart cabbage,	810
Wheat,	107	Cabbage meal,	83
Barley meal,	119	Potatoes,	613
Barley,	130	Potatoe meal,	126
Rye,	111	Carrots,	757
Buckwheat,	108	Carrot meal,	95
Maize,	138	Turnips,	1335
Yellow peas,	67	Mealy bananas, (Ticus Indica)	700
Horse beans,	44	Manchat, (Casava plant)	700
White French beans,	56	Name? (Discorea sativa)	300
Rice,	171	Assio, (Anacacha)	1050
Lentils,	57		

From the data afforded by this table or list of equivalents, it appears that leguminous vegetables are possessed of a higher nutritive value than wheaten flour; tubers, including potatoes, carrots, turnips, and the seeds of the cereal grasses, are but moderately nutritious; rice, generally regarded as occupying a very conspicuous place in the list of highly nutritious substances, is partially deficient.

We are all aware, that countries are frequently quoted where vegetable articles, such as rice and the potato, constitute the sole articles of food with the inhabitants. From long experience in such countries, having lived among the inhabitants, Boussingault affirms such not to be the case. "In Alsace, for example," he says, "the peasantry always associate their potato diet with a large quantity of sour curdled milk. The same is true of the inhabitants of Ireland, who use large quantities of butter-milk or salt herring. The inhabitants of the Upper Andes, instead of living exclusively on potatoes, as travellers have asserted, use as their most common food '*locro*,' a compound of potatoes and cheese. Rice, upon which it has been said the population of India almost exclusively subsist, appears always to undergo an admixture with other substances." Mr. Lequerri, after a long residence in India, says, "the food is almost entirely vegetable, and rice is the staple; the inferior castes only, ever eat meat. But all eat '*kari*,' an article prepared with meat, fish, or vegetables, which is mixed with the rice boiled in very little water. It is requisite to have seen the Indians at their meals to have any idea of the enormous quantity of rice they will put into their stomachs at a single meal. No European could cram so much

at a time; and they very commonly allow that rice will not nourish them." (Boussingault on Rural Economy, and its relations to Chemistry, Physics, and Meteorology.)

Estimating the proportions of nutritious matter of different kinds of food by their chemical composition, and by experiments upon man and inferior animals, we shall fail in coming to any other conclusions than that *flesh*, of all the articles used as aliments, contains the least redundant matter, and is the richest in the materials necessary to sustain life and health. Playfair and Boeckman give for flesh, (fibrin, albumen, cellular-tissue and nerves) and for blood, one and the same formula, namely: carbon 48, nitrogen 6, hydrogen 39, oxygen 15. (Liebig's Animal Chem.) Liebig himself, says that 15 lbs. of flesh contain not more carbon than 4 lbs. of starch. When this matter is tested by experience it is found to be strengthened. Indirectly, the experiments of Magendie show, that animals, although incapable of living exclusively for any length of time on any one article, may, nevertheless, be supported for the greatest length of time on those organic principles having a composition identical with flesh. Liebig also tells us that the process of metamorphosis, and of nutrition, and reproduction goes on more slowly in graminivorous than carnivorous animals; and that the cause of this depends upon the fact that 4-5th lbs. of the food of the former are destitute of those nitrogenized compounds (fibrin and albumen) which go to make blood. A pig, according to him, fed with highly nitrogenized food, becomes full of flesh; fed with potatoes (starch) it acquires little *flesh*, but a thick layer of *fat*.

From these facts it is very probable that flesh, approaching as it does to the formula of blood, contains the greatest relative proportion of nutritive matter; and that, other things being equal, man can subsist on less quantities by weight of this article than any other known among the list of aliments. By no means do we intend to say that he can live in the enjoyment of health on flesh alone; or that this would be his proper food. But from the facts to which we have alluded, we

regard the position as reasonable that it contains the greatest relative amount of nourishment.

While upon this part of our subject, it should not be forgotten, that some bodies highly nitrogenized, with others containing no nitrogen, although predominant in many articles used as aliments, fail when exclusively relied upon to sustain life, or even to maintain the system in a state of health. With the experiments of Magendie, Bostock, and Liebig, physiologists are familiar. By the first of these authors, it has long since been demonstrated, that sugar, olive oil, gum arabic, butter, pure wheaten bread, or rice, fail, when administered separately for any length of time to a dog, to sustain life. Phenomena, such as ulceration of the cornea, disappearance of fat, reduction of the size of the muscles, contraction of the stomach and intestines, an alkaline instead of an acid condition of the urine, too great a proportion of bilin or picromel in the bile, were observed to be the result, followed ultimately by death. Liebig also affirms that animals fed exclusively on gelatin, the most highly nitrogenized element of the food of the carnivora, died with the symptoms of starvation.

For this want of the nutritive power or principle, in the substances to which we have alluded, reasons are not easily assigned. Some of the animals, upon which experiments were made, were examined in order to see if the articles had undergone digestion. Magendie satisfied himself in relation to this point. He found that each of the substances had been converted into chyme, and that they afforded an abundant supply of chyle. Failing to find any thing in digestion adequate to an explanation of the subject, M. came to the conclusion, that *variety of diet* is an indispensable circumstance in this branch of hygiene—that the phenomena consequent upon his experiments were due equally as much to the simplicity of the food, as to any thing in relation to its properties. Stark, who sacrificed his life in making experiments of a similar character, came to the same conclusions. Upon this point, however, the labors of the organic chemist are useful. Mulder and Liebig have made the position very plausible, that the

non-nitrogenized substances, such as sugar, starch, gum, the different kinds of *fat*, &c., are, properly speaking, the elements of *respiration*, rather than of *nutrition;* and that gelatin, although highly nitrogenized, is destitute of the proper arrangement in the proportion of its elements to form blood. It contains no sulphur or phosphorus, and less carbon, or more nitrogen than the organic elements from which blood is formed.

The fact should not be overlooked, in this place, that a source of fallacy, growing out of the habits of the animals experimented upon might have affected in a very material manner the results of Magendie's experiments. It could not be expected, for example, that a dog would thrive well on sugar, or that an ass could live on rice, or that man, accustomed to variety, could do well, for any length of time, on any single article. Personal observation is sufficient to convince any one, accustomed to the varieties of diet common to our climate, that it is impossible, without a sacrifice of health, to live for any length of time upon any one article that might be selected from the list of alimentary substances. Those acquainted with rural economy have always been familiar with the salutary results of variety in the feeding of domestic animals, and also with the deleterious consequences which result from a restricted system of regimen. At a manufacturing establishment in this State, for slaughtering sheep, the blood and inferior parts of the flesh were fed to hogs. It was found, as I have learned, that these animals, on such food, did not do well; were not easily fattened. Accordingly, meal was afterwards mixed with the food, and the result of this measure proved highly favorable. Now, without doubt, the effects of this experiment would have been different, had the animals been only accustomed to the digestion of animal food. Nevertheless, it would be very interesting to know which of the tissues, in the experiment, underwent the most alteration. The muscular, from its similarity to the food consumed, it might be supposed, suffered the least. Next in point of exemption from any great change were, most likely, those tissues composed

principally of gelatin. Diminished condition of the nervous, pulpy, or medullary tissues composed principally of albumen united to a fatty matter, together with the deposition of fat, were probably the most conspicuous phenomena attending the experiment.

From this brief reference to facts, the accuracy of which cannot be called in question, without setting aside the only mode we have of testing the composition of organic bodies, it is very evident, that the greatest proportion of nutritious matter is found in animal substances, and other things being equal, animals of the inferior classes, not less than man, require, to enjoy health, variety of diet, and frequent changes from one article to another.

Exclusive Vegetable-eating.—Deference might make it proper in this place to advert, briefly, to the opinions of some persons concerning the propriety of exclusive vegetable eating. Frequently it is asserted that the nourishment of vegetables is better calculated to promote long life, a vigorous and healthy condition of all the functions, intellectual, moral, and physical, than that derived from animal matter. By such persons it is also asserted, that animal aliment was originally the main cause of human degeneracy; that it is discountenanced by the Bible; that it is calculated to make the individuals who use it vicious, intemperate, and blood-thirsty; that it gives rise to a great number of diseases, to which mankind would not otherwise be subject. Eulogies really the most passionate have been bestowed upon vegetable-eating, while reasonings the most elaborate have been directed against a mixed diet; and that too, not less by persons holding conspicuous stations in the commonwealth of letters, than by medical men, many of whom in their day were deeply versed in the literature of their profession.

Dr. Wm. Alcott's work is now before us with the following imposing title: "*Vegetable Diet as sanctioned by Medical men, in all ages.*" I find in this work such names as Rush, Cullen, Gregory, Lawrence, Cuvier, Home, Cheyne, Abernethy,

and Muzzy, quoted in favor of man deriving his food exclusively from vegetables. In justice, however, to many of these distinguished authors it should be remarked, that they delivered themselves on this exclusive system with very considerable ambiguity. This is not true, I confess, of our friend Professor Muzzy, formerly of Hanover, New Hampshire, now of Cincinnati, Ohio. From the terms of his expressions he stands committed for a number of reasons, founded not less on moral than on physical considerations. Take, however, as a sample of ambiguity, the quotation from the eccentric Abernethy to show that *he* is in favor of the system:

"If you put improper food in the stomach it becomes disordered, and the whole system is affected. Vegetable matter ferments and becomes gaseous; while animal substances are changed into a putrid, abominable, and acid stimulus. Now, some people acquire preposterous noses; others, blotches on the face, and different parts of the body; others inflammation of the eyes, all arising from irritations of the stomach. I am often asked why I don't practice what I preach. I reply by reminding the inquirer of the parson and the sign-post—both point the way, but neither follows its course."

In relation to the various opinions which have obtained currency upon vegetable-eating, it may be submitted, that at the time that most of them were rife, the only certain method of testing the nutritive qualities of alimentary substances was in its infancy. Analysis of the animal and vegetable articles commonly used as food, had not taken place. Until within the present century nobody had any evidence to believe that the nourishing principles were of a constant character;* always the same, whether derived from animal or vegetable

* We are aware, that, by some recent experiments, said to have been conducted with great care, Dumas and Cahours are supposed to have succeeded in showing that the proportion of carbon is 7 per cent. less in fibrin than in albumen, while that of azote is from 8 to 9 per cent. more. These experiments will remove albumen and fibrin from the class of *isomeric* bodies. They do not, however, affect the question of the identity of animal albumen, fibrin, and casein with vegetable albumen, fibrin, and casein.

matter; and identical in chemical composition with the blood. Attested, nevertheless, as such facts have been by chemical analysis, they must have their influence in making up an opinion concerning the proper food of man. Experiments upon inferior animals strengthen their correctness. So, also, does a proper understanding of the process of chymification. Food when submitted to the action of the gastric juice is dissolved, but we are told that its elements, albumen, fibrin, and casein, are not changed in chemical composition. In his work on Animal Chemistry, Liebig tells us: "The clear gastric juice contains a substance in a state of transformation, by the contact of which with those constituents of the food, which by themselves are insoluble in water, the latter acquire in virtue of a new grouping of their atoms the property of dissolving in that fluid. During digestion the gastric juice when separated is found to contain a free mineral acid, the presence of which checks all further change. That the food is rendered soluble quite independent of the *vitality* of the digestive organs, has been proved by a number of the most beautiful experiments. Food, enclosed in perforated metallic tubes, so that it could not come in contact with the stomach was found to disappear as rapidly, and to be as perfectly digested, as if the covering had been absent; and fresh gastric juice, out of the body, when boiled white of egg, or muscular fibre was kept in contact with it for a time, at the temperature of the body, caused these substances to lose the solid form and to dissolve in the liquid." By this it appears that in chymification the elements of the food undergo no change except that of being dissolved, and made to assume a form ready for assimilation.

If then the constituents of the food derived from animal or vegetable matter be the same, and are not altered by chymification, but pass immediately into the blood unchanged, it is reasonable to suppose that considerations founded on something else than nutrition must operate on an individual who prefers vegetable to animal food.

Concerning the supposition that animal food makes those

who use it vicious and sanguine in disposition, I have only to say, that such speculations seem more likely to have had their origin in the imagination, than in reason, or a careful and an extensive observance of the influence of food on the habits and dispositions of animals. Like causes under like circumstances, must give rise to something like the same effects. How, then, is it possible for animal, which as we have seen differs in no respect from vegetable food, to give rise to consequences which the latter is entirely incapable of producing.

Into a consideration of the *morality* of eating animal food we shall not enter. This question belongs to the department of Theology, and by the Divine Code only can it be settled. We shall now proceed to a slight consideration of a few points in relation to

The Circumstances requiring a modification of Diet.— Only is it intended here to point out some of the circumstances that, *in health*, require a variation of diet. Hacknied as this part of our subject has been, in times past, it is still, perhaps, fertile enough to furnish employment for additional thought and experiment.

Among the circumstances to which we allude is the *season of the year* in which the diet is used. It is undoubtedly true that alimentary substances which might be proper at one season of the year may at another prove more or less injurious. Of course persons would do better on a diet calculated to promote calorification in winter, than in summer. In his theory of calorification, Liebig takes the very plausible position that the hydrogen and carbon of the food exercise an agency in the production of animal heat. It matters not, he informs us, what intermediate changes the food may undergo in the organism, the last change is the conversion of its carbon into carbonic acid, and its hydrogen into water. The oxygen for these chemical processes is taken in chiefly through the lungs; and the author to whom we have alluded, contends, that, inasmuch as oxygen cannot combine with either hydrogen or carbon *outside* of the body without the liberation

of heat, therefore it is rational to suppose that the same processes cannot go on *inside* of the body without being attended with a corresponding result; and also, that the quantity of heat is just the same as if the carbon and hydrogen had been burned in the open air. If such positions be correct; if they are to be regarded as the literature of calorification at the present time, then all must agree that food rich in carbon and hydrogen suits better for winter than for summer. The habits of nations on different parts of the globe are referred to by Liebig in order to strengthen the positions advanced.

In the South we are told the natives prefer to feed on the fruits which in the fresh state contain not more than 12 per cent. of carbon; while those in the Arctic regions live principally on bacon and train-oil containing from 60 to 80 per cent. of carbon. In temperate climates, it is thought, we need about one-eighth more carbon in winter than in summer.

Recently we have had some additional testimony on this subject. In a paper by John Robertson, of Manchester, England, "*On the period of Puberty in Esquimaux Women.*" a letter is published from the Rev. J. Lundberg, Superintendent of the Moravian Missions, in which we have the following facts: "We observe with regret that the now more frequent use of European provisions, as bread, flour, peas, &c., (instead of fish and flesh) acts injuriously on the bodily constitution of the Esquimaux. They become weaker and are attacked with some diseases which were formerly unknown in Labrador."

Bearing indirectly on this matter is the fact, that animals eliminate more carbonic acid by the function of respiration at a low, than at a high temperature; more, therefore, in winter, than in summer. F. M. Letellier, lately in a memoir to the French *Academie des Sciences*, related some experiments proving that the amount of carbonic acid expired at 32° Fahr. was about twice as much as at the temperature of 86°. For the production of this relative excess of carbonic acid, the food certainly must contain an excess of carbon; because it is axiomatic that the excretions during health can contain nothing not previously taken into the system, either as food or

as the materials of respiration. If, then, there be a connexion between the constituents of the food and the production of animal heat, it is obvious that modifications of the former are indispensable to a physiological regulation of the latter. Now, whether we adopt the theory of *Lavoisier*, *Seguin*, and *Liebig*, that the heat of the system is derived from the combination of the oxygen inspired, with the carbon and hydrogen of the metamorphosed tissues which proceed ultimately from the food; or that of *Black*, that it is the result of the latent heat of the inspired air becoming sensible in the lungs; or that of *Brodie*, that it is derived from the great nervous centres; or that of *Chosat*, who thinks that the trisplanchnic nerve is the great organ for its development; or that of *Home*, that it depends on the ganglionic part of the nervous system; or that of *Phillip*, who regards it as a secretion; or that of those who look upon it as the joint production of the three great functions of life, innervation, circulation, and secretion,—certain it is, that the theory of combustion as defended and explained by Liebig, is the most philosophical of any that has yet been proposed. Resisted, indeed, the positions cannot be that a union of oxygen with hydrogen and carbon, giving rise to water and carbonic acid, takes place some how or other in the system; and that these combinations cannot take place without the liberation of constant quantities of heat, as much as if burned in the open air, or oxygen gas. The circumstances then being present, it is rational to conclude, that, although under the controling influence of the vital force, this force is only exerted in placing the elements in a proper condition for that play of the affinities by which the phenomena of heat are produced.

It has for some time been known, that the relative proportion of oxygen in the atmosphere is greater in winter than in summer; and consequently that the amount inspired is greater at the former than at the latter period. This excess of oxygen corresponds with the excess of carbonic acid evolved during cold weather, as shown by the experiments of Letellier. Now, if there is taken into the system in a low temperature

of the atmosphere a relative excess of oxygen; and if there is a relative excess of carbonic acid during the same period expired, how can we resist the conclusion that the food must contain carbon in quantities sufficient for the conversion of the excess of oxygen into carbonic acid? Does not also the production of this excess of carbonic acid enable us to understand how it is that the inhabitants of the polar regions are enabled to resist a temperature from 70° to 90° lower than that of their bodies?

Taken then as sustained, that the diet should correspond with the temperature of the atmosphere in the different seasons of the year, it might now be inquired what kind of diet is best calculated to promote health. Imperfectly, we are aware, in the present state of our knowledge, can this question be answered. There can be but little doubt, that the practices, which have obtained among the inhabitants of the climatic extremes and temperate latitudes, are in the general correct; such as are demanded by the peculiar conditions of the atmosphere in which they reside. Those inhabiting the arctic regions will enjoy the best health by using food rich in hydrogen and carbon, such as the oleaginous substances. In the South, of course, the diet just mentioned would be contra-indicated. Fruits and such articles as are deficient in the elements of calorification, with them would be best calculated to promote health. We of a temperate climate, it might reasonably be presumed, should make use of a diet approaching in winter that used by the inhabitants of the North; while in summer it should correspond more nearly to that used by the inhabitants of the South. This is exactly the practice, which so far as we are acquainted in our climate has pretty universally obtained. We consume mostly during winter the oleaginous parts of animal food, such as bacon, fat meats of all kinds, and butter; while in summer the diet consists more of the vegeto-gelatinous, the saccharine and the farinaceous; the former class rich in carbon, the latter partially deficient.

Of the influence of *age* in requiring modifications of diet,

every one, the least conversant with dietetics is familiar. From the first hour of infancy until adult age, and from this until the last periods of decline, the system is undergoing continual mutations; and the requirements of each period must obviously correspond with the different conditions of the system.

In childhood where respiration is very frequent (35), the circulation quick (120), and the temperature high (102°,) nature has made a provision in the form of milk, which is a natural product perfectly fitted to sustain life. Analytically considered, this substance is found to contain all the constituents requisite for the development and growth of the young system. The casein of which it is in part composed, is a nitrogenized constituent, distinguished from fibrin and albumen by its great solubility, and by not coagulating when heated. It is identical in composition with the blood, containing, however, a much larger proportion of the earth of bones, and that in a form so soluble, as to be capable of reaching every part of the body. Milk also contains sugar and butter, substances having no nitrogen in their composition, but large proportions of carbon and hydrogen. Regarded as a compound, there appears to be, in the composition of milk, an obvious adaptation of means to ends. For the development and continual growth of the bones, muscles, &c., the casein is provided; and, to answer the wants of the exalted temperature and the frequency of the respirations, materials abounding in carbon and hydrogen are found in the butter and sugar.

Very *old persons* have a condition of the system that differs widely from that incident to childhood. With them waste and supply are not in a state of equilibrium. The former, in a normal condition of the system predominates. Ordinarily in *confirmed old age* or *caducity*, there is noticed among other changes incident to this period, an atrophied state of the thorax and lungs, which necessarily diminishes the amount of oxygen inspired; predispositions of the voluntary and involuntary muscles to paralysis, from want of ner-

vous influence; ossification of the valves of the heart and arteries; torpidity of the chylopoitic apparatus; and an inefficient condition of the function of calorification. A diet suitable to these various states of the organism, must differ widely from that proper to a child, or to an individual in the period of adolescence. The casein of milk contains too great a proportion of the earth of bones. Such constituents are not needed, as the osseous system is already developed. Butter contains hydrogen and carbon in proportions too great to be supplied with their equivalents of oxygen. Diminished so much in capacity, the lungs, it would be reasonable to suppose, would fail in furnishing the requisite quantities of oxygen for the oxidation of these elements. To most observers it is also known that, not only butter, but fats of all kinds, are digested with difficulty. Such being the case they are, in consequence of the weakness of the digestive organs of an old person, contra indicated. To keep the system in a physiological condition the food, it might be presumed, should consist, in order to supply waste, of articles containing a reasonable proportion of nutritious matter, and also of a sufficiency of elements calculated to maintain the function of calorification. For these purposes the most digestible kinds of flesh, farinaceous, and the vegeto-gelatinous substances, all things considered, would, perhaps, answer as well as any other to fulfil the indications presented. Leguminous plants, it should be recollected, are of all vegetable substances the richest in nutritive principles, and from such a consideration would likely be better adapted to the condition of the system we have been considering than flesh of any kind. Old persons while in the enjoyment of apparent health are found to suffer more than any other class from the effects of a low temperature of the atmosphere. My own observations in relation to them are, that the most of them die during winter; and often too, without any other visible cause than coldness of the weather. Many indeed, go to bed at night seemingly well, but in the morning are found dead. Unqestionably the cause of all this will find its best explanation in the imper-

fect condition of the function of calorification; and as a consequence the food, no less than other things, may reasonably be invoked in trying to avert such a catastrophe.

Between the two extremes we have the period of *virility* or manhood, in which the system differs from that of an old person in the fact that there is no preponderance of the various functions in favor of *waste;* and from the child in that there is none in favor of increase of mass. Waste and supply are exactly balanced; and notwithstanding the immense amount of substances taken into the system during a year (there is of oxygen alone 746 lbs., according to Lavoisier, and of carbon 5,073 ounces,) by the assimilative and respiratory functions, the body at the end of that time is found, as regards its weight, not to be increased. With such an individual we should not expect a diet to agree unless it comported with the peculiar condition of the system. To increase the mass and build up the osseous system, as in the case of a child, a peculiarity of substances alimentary would not be needed. Nor would the diet require to be shaped in accordance with the waste and lack of energy found in the principal functions of life in an old person. Food calculated to keep waste and supply balanced, and to afford the necessary materials of respiration would seem to be what is indicated. Best adapted to the accomplishment of these ends, are, as we have elsewhere shown, those nitrogenized substances abounding in albumen and fibrin, and also the non-nitrogenized substances. We have seen that the former are contained in greatest proportions in flesh, the leguminous plants, lentils, and wheaten flour; the latter in the various fats, oleaginous substances generally, potatoes, maize, &c. As there are, however, a number of circumstances which require that the food should be varied, and without due respect to which all the blessings of diet may be frustrated, we shall now advert to some of these, but only to give them a very partial consideration.

Prominently among these are *occupation* and *habit.*

The man engaged, from 12 to 16 hours every day, in physical efforts, may use a diet with impunity, nay with advan-

tage, that would cause disease in a person engaged in intellectual pursuits, connected with confinement and sedentary habits. Strikingly is this fact exemplified in every day's experience. The man at hard labor during the day is able to consume at night large portions of flesh, fat, vegetables, &c.; while another one, sitting at the writing table all day, makes a very good meal on two or three biscuits and a cup of tea. Both enjoy good health, but it is only in consequence of employing such alimentary substances as are suitable to their occupations. The physician actively engaged in the arduous duties of his profession knows that he can then digest articles in quantities and of qualities, that under other circumstances would operate upon him as a source of great annoyance. Satisfactory reasons for this are easily assigned. An individual at labor respires more frequently than when at rest; the circulation is carried on with greater rapidity; the gastric juice is secreted more copiously, and indeed, increased activity applies, not less to all the secretory organs, than it does to those the office of which is to excrete. By the frequency of respiration the amount of oxygen introduced into the system is greatly augmented, and as a consequence the constituents of the venous blood arising from the metamorphosis of the tissues are rapidly oxidated. The augmented condition of the circulation quickly displaces the effete parts of organs and tissues; and hence there is created in the system, in order to supply their place, an absolute demand for substances in quantities sufficient for the purposes of assimilation. An increased supply of gastric juice corresponding with the other conditions present in the system of a laboring man is an indispensable circumstance, and favors the digestion and assimilation of his food. At rest, with no food in the stomach, the gastric juice is secreted in small quantities. The reverse of this takes place when the stomach is full and there is exercise. Here then are present all the circumstances necessary to the digestion of the largest quantities of food.

With a person engaged in intellectual pursuits a different state of things obtains. The severe student or author knows

that after indulging in a full meal of stimulating animal or vegetable food, his mind is rendered dull, stupid, and inactive, and is incompetent to the performance of its ordinary labor. A singular indescribable sensation of uneasiness, attended with indisposition to bodily or mental exertion pervades the entire system; and, as a matter of course, he is compelled to remain idle during the hours of digestion. The cause of this trouble has generally been sought for in the supposition that it is all occasioned by the presence of the food withdrawing the nervous and vascular influence from the brain and colonizing them for a time in the stomach. Good as this reason appears to be, it may be made better by connecting it with the fact, that the functions of secretion and excretion, of circulation and respiration in the intellectual man, if not impaired, are usually below the standard of health. Generally, intellectual men are observed to have pale faces, weak circulation, little muscular strength, and an enfeebled condition of the digestive organs. Taken all together, therefore, these things do much towards showing the propriety of such variations in the food as will comport with the peculiarities of the organism. Incidentally it might here be remarked, that the making of a proper selection of alimentary substances, by men engaged in intellectual pursuits, is of the utmost possible importance. Without a strict attention to his diet no man can make progress in intellectual labor. The right exercise of the mind is to a certain extent dependent upon the stomach. When the stomach contains substances in quantities, or of qualities that it cannot readily digest, a suspension of all the energies of the mind is the consequence. This, however, is not all; the stomach, even after the load from it is removed, is for some time afterwards in a disordered condition. The repetition of such errors soon leads to disease, by which the individual is often converted into a confirmed invalid. By no means do we wish to be understood that men who labor with their minds should not eat; nor would we even say that they should not regard the consumption of the luxuries of our climate as a source of enjoyment,

and thus, if they think proper, make the saying good, that they "*live to eat.*" There is a diet proper for them, as well as for laboring men. But it has its peculiarities, and it is these, we urge, that should be made the subject of the strictest attention during life. As we have partially alluded, in another place, to the diet most proper, and as every individual has his own idiosyncracies that should invariably be consulted, we shall not insist further upon the subject than by adverting to a maxim of former days, which is, that "so far as his food is concerned, man is either his own physician or a fool at the age of forty."

That *habit* has something about it that should be consulted in the selection of a proper diet, seems pretty obvious. According to vulgar expression, it is "*second nature.*" We see this strikingly manifested in individuals who in the early period of life and while the organism is being developed, are accustomed to active exercise or hard labor; but at the period of manhood, or afterwards, adopt habits of a contrary character. Such find that without making a corresponding change in diet, or some regulations in regard to exercise, they are precipitated into disease. I have often noticed this to be the case with young students. Many of them are accustomed in early life to active exercise or labor. More or less of this they usually take during their private pupilage. When, however, they go to attend the teaching of professors, their former habits ar forgotten. Duty requires a large portion of their time in their rooms, or at the college; and the result is disease of the digestive organs, and impairment of the secretions generally of the system. It has been supposed that active exercise in early life exerts a favorable influence in developing and hardening the physical powers. This is very true, but it also creates a demand in the system for the continuance of such habits. In consequence of this, persons accustomed to labor in early life, bear the confinement incident to intellectual pursuits with much more inconvenience, than those who have spent the first periods of life in comparative idleness. Besides students proper, there is another class of

persons among whom the annual mortality in our country from want of proper dietetic regulations is very high. I allude to those who having been raised to habits of active exercise or labor, adopt afterwards, as a means of obtaining a livelihood, some sedentary mechanical pursuit, or perhaps that of standing behind the counter in mercantile establishments. In a short time such find the appetite failing; grow pale from a sluggish condition of the circulation; are afflicted with constipation, sour stomach, gasterrhœa, &c. Instead of regarding these inconveniences as results of a change of habit, which could be easily remedied, recourse is too often had to stimulants, sweet-meats, and trash of various kinds, than which nothing could exercise consequences more injurious. The only way then by which all those who have been accustomed to active exercise can avoid much inconvenience and disease, is by strict regard to regimen, and such other things as will comport with their change of habit and occupation.

[TO BE CONTINUED.]

REVIEWS.

Art. III.—*Elements of Pathological Anatomy;* Illustrated by Colored Engravings and Two Hundred and Fifty Woodcuts. By Samuel D. Gross, M.D., Professor of Surgery in the Medical Institute of Louisville; Late Professor of Pathological Anatomy in the Medical Department of the Cincinnati College; Surgeon to the Louisville Marine Hospital, etc., etc. *Second Edition, thoroughly Revised and greatly Enlarged.* Philadelphia: Ed. Barrington & Geo. D. Haswell. Louisville: James Maxwell, jr. 1845. Super-royal 8vo. pp. 822.

[continued from page 134.]

Resuming our notice of this volume, we come next to Chapter xvii, which treats of *Polypes.* These occur in any part of the mucous system, except the gall-bladder, ureters, and Fallopian tubes. The most common situation is the nose; next to this is the uterus; then comes the maxillary sinus; then the rectum; and, lastly, the vagina. Polypes are likewise found in the inferior animals, especially the horse, ass, cow, and dog; and here they affect the same situations as in the human subject. In regard to their structure, four varieties are observed: the vesicular, gelatinoid or cellular, which is most frequently seen in the nose; the fibrous, most common in the uterus; the vascular, rarer than the two preceding, and found in the rectum, external ear, vagina, and uterus; lastly, the granular, least frequent of any, and found chiefly in the uterus. They are all liable to undergo changes from disease, like other morbid productions; and these changes have been erected into classes by some pathologists. Hence the carcinomatous, lardaceous, fibro-cartilaginous, cartilaginous, osseous, and earthy polypes. The fibrous and granular varieties are liable to malignant degeneration; the others rarely, if ever.

The harder varieties are nearly always solitary; the softer ones frequently multiple, or in clusters. They sometimes coexist in different parts of the body. Polypes are not new formations, but result from hypertrophy of the mucous membrane alone, or conjoined with some of the textures which it overlies. Thus in different polypes, different tissues predominate: in the fibrous, the fibrous textures of the part; in the vesicular, the mucous membrane and the cellular tissue beneath it; in the granular, the mucous follicles.

Polypes are always covered by mucous membrane, which is liable to various alterations. In the interior, cysts are frequently found, containing serous, purulent, or bloody fluids; and even tubercular matter has been seen in nasal polypes. The effects of these tumors on the surrounding parts vary according to their size and situation. In the uterus, even a very small one may give rise to fatal hemorrhages. In the maxillary sinus, they produce immense deformity, by distending that cavity, and encroaching upon the eye, nose, and lachrymal canal. In the larynx, they cause dyspnœa, and alteration or total extinction of voice. Polypes, it need scarcely be said, are endowed with blood-vessels, nerves, and absorbents.

Chapter xviii—Treats of a curious and interesting subject—that of *Hydatids*. Hydatids have the form of a thin vesicle, filled with a clear transparent fluid, and surrounded by a dense fibrous capsule. They infest nearly all classes of animals. In the human subject they are most common in adults and the old, but have been observed in the fœtus. Their existence is brief, occupying at most but a year or two. They have been differently classified by different writers; the author adopts the division of Cloquet, who makes five genera: the *cysticercus*, the *polycephalus*, the *diceras*, the *echinococcus*, and the *acephalocystis*. The first four genera are provided with appendices resembling heads, hooklets, tentacula, or suckers; hence they are sometimes called cephalocysts; they exhibit a very feeble degree of sensibility and motility. The acephalocysts, as the name implies, have no heads, or hooklets, but consist of a simple globular vesicle; they are impas-

sive under stimuli, exhibiting neither motion nor sensibility, their claims to individual life resting upon the power of self-nutrition and of reproduction which they possess in common with the others. Of the cysticercus there are five species: 1. The cellular, found almost exclusively in the hog, in which it constitutes the *measles*, and seen only once or twice in man. 2. The vesicular, observed once in the choroid plexus of an apoplectic subject—common in the ox, sheep, hog, goat, stag, and gazelle. 3. The dicystis, found by Laennec in the lateral ventricles of an apoplectic man. 4. The speckled, observed once by Treutler in the choroid plexus of a young female. 5. The Fischerian, found likewise in the choroid plexus of the human subject, on two occasions, by Fischer, after whom it is named. The polycephalus is rare, and has not yet been found in the human subject; it occurs in the brain, liver, and intermuscular cellular tissue of the inferior animals—when existing in the brain, producing what is called the *staggers*. The diceras is met with in the alimentary canal of the lower animals, and occasionally in that of man. The echinococcus, a genus not admitted by Cuvier, occupies the brain, liver, spleen, and omentum, in the lower animals; in man it has been twice observed in the ventricles of the brain, and once voided in the urine. The most common, as well as the most interesting class, is the acephalocystis. This occurs both in man and the lower animals, and infests particularly the liver, but has been found in every part of the body except the alimentary canal, urinary bladder, and lungs. Cruveilhier divides the acephalocysts into two species, the solitary and the social. The former is most common in the lower animals, and generally exists simultaneously in several organs; the latter is oftenest seen in man, and rarely infests more than a single organ, its favorite seat being the ovary and uterus, from the latter of which immense masses are sometimes expelled. The internal surface of the acephalocyst, and of some other varieties, is often found studded with minute granular bodies, greyish and spherical, which are supposed to be young hydatids; the cyst is then said to be endogenous. Sometimes the granular bodies

are found upon the external surface; the entozoon is then said to be exogenous. The former is most frequent in the human subject, the latter in ruminant animals. Occasionally the development takes place between the different tunics of the cyst. A large acephalocyst is sometimes found to contain several smaller ones, situated one within the other, like so many pill-boxes, and progressively diminishing in size. Occasionally, these secondary cysts, by their rapid development, burst the parent cyst. Hydatids are not in immediate contact with the tissues where they are situated, but are surrounded and isolated by a cyst; and often between their parietes and this enclosing capsule, is interposed a soft, pulpy, dirty-looking substance, regarded by Hodgkin as an excrementitious secretion of the hydatid itself.

Whence come these parasites? and what is their organization? These are interesting questions, but in answer to them we have nothing but conjectures more or less plausible. As it respects their origin, the author adopts the opinion of Vitet, that they result from inflammation—an inflammation of a specific nature, "followed by the deposition of a fibro-albuminous substance, or, what is the same thing, a sort of plastic lymph, the particles of which arrange themselves in such a manner as to create an inferior being, an entozooic parasite." The capsule enclosing this parasite, is not derived, as Hodgkin supposes, from the surrounding cellular tissue, inasmuch as it is frequently found where that tissue is almost absent; but is a new formation, like the hydatid itself, developed at the same time with the latter, and differing from it only in the arrangement of its particles. This enclosing cyst is furnished with vessels, in many instances continuous with those of the adjacent parts, in other cases having no such connection, but evidently of new formation. In no case can these vessels be traced into the parietes of the hydatid. Has the latter any vessels? and whence comes the clear transparent fluid it contains when healthy, or the turbid, discolored, and variously altered fluid when diseased? Secretion does not take place in any animal, however minute, without vessels; and hence,

if the contents of the hydatid are allowed to be of its own production, it must be provided with vessels. Experiments have been made by Carmichael and Owen, from which it appears that endosmose takes place in these animals; but these experiments only show that the fluids in question *may* gain admittance in that mode, not that they always *do* thus gain admittance. A question still remains: whence come the materials for the nourishment of these beings? This is derived from the vessels of the enclosing cyst, being filtered through the soft pulpy substance which lies between it and the hydatid, and then imbibed by the proper cyst of the latter. Such, are some of the author's conjectures—for they are nothing more, and claim to be nothing more. They are by no means satisfactory to us, nor do they seem altogether consistent with each other.

Klencke, of Berlin, has some novel views concerning hydatids. He considers them as a *living contagious principle*, and has published experiments to show their transmissibility. As they exist in very many animals, not only in the flesh, but likewise in the urine, fæces, milk, menstrual fluid, and even in the blood, there is no scarcity of them in the external world, either as ovules, or individuals more or less completely developed; and once admitted into the human intestinal canal they may find their way thence into different tissues, or the ovules, being excessively minute, may enter the circulation and be transported through the system to any organ of the body that affords a proper *nidus* for their reception. The acephalocysts, according to the same writer, are not distinct from the echinococci, being ova of the latter; and the polycephalous hydatid he views as a sort of polypus, each one of the heads representing a distinct individual being. He has seen the parent vesicle with an appearance of contraction or division, which he regards as commencing fission. The polycephalus is also propagated by buds or gems like the acephalocyst; so that the reproduction of hydatids takes place both by fissiparous and gemmiparous generation.

As the acephalocyst neither feels nor moves, Professor

Owen thinks it doubtful whether they can be referred to the animal kingdom as that kingdom is at present characterized. He goes on to say: "It would then be a question how far its chemical composition forbids us to rank the acephalocyst among vegetables. In this kingdom it would obviously take place next those simple and minute vesicles which in the aggregate constitute the green matter of Priestly (*Protococcus viridis, Agardh*); or those equally simple but differently colored *psychodiariæ*, which give rise to the red snow of the arctic regions (*protococcus kermesianus.*) These 'first born of Flora' consist, in fact, of a simple transparent cyst, and propagate their kind by gemmules developed from the external surface of their parent."

The successive development of acephalocysts one within the other, bears a striking similarity to the development of the primitive cells of animal and vegetable structure; for the former like the latter, appear to be nucleated cells from the interior of which new cell-germs are evolved. Now it can be conceived that inflammation might act as a cause of disaggregation to the cells of which the tissues are composed; but it remains to understand how the off-sets thus formed become endowed with individuality, or with a separate and distinct life.

Whether we can trace the immediate causes of hydatids or not, we know some of the circumstances under which they are produced. Sheep kept in wet clayey pastures, and eating juicy unripe vegetables, are subject to them. The author estimates that one-tenth of the hogs annually slaughtered in the shambles of Cincinnati, are thus affected; and he accounts for it by the fact that these animals "are literally stuffed with fresh corn for five or six weeks before they are sent to market;" hence arises congestion of the portal circle, and inflammation of the liver and other organs, with development of acephalocysts. The cysticerci are developed in rabbits confined in damp coops, shut out from sun and air. And in the human subject, the entozoa generally are most common in moist countries.

Hydatids sometimes disappear without any obvious cause. They may suffer inflammation, leading when acute to suppuration and gangrene; or, when more chronic, to thickening and induration of the parietes, and sometimes to the cartilaginous and bony transformations. To the surrounding parts they prove mischievous by their number and their size; exciting inflammatory action, which goes on to suppuration, softening, gangrene, induration—or to ulceration, by which they make their way through the hardest structures.

Similar to the vesicular worms just discussed, and often confounded with them, but yet different in many important particulars, are the *Serous Cysts* met with in various parts of the body. They form shut sacs, like the natural serous membranes—smooth and in contact with a fluid on the internal surface, rough and adherent on the other; in size, they vary from a mustard-seed to a large melon; and in shape, are more or less globular. Like hydatids they have been observed in nearly all classes of animals; but are most frequent in the old, and, according to the author's experience, more frequent in the female than in the male. The organs which seem to be their favorite seat are the ovaries, liver, kidneys, mammæ, and testicles, to which may be added the brain of old persons. According to their structure, serous cysts may be divided into three kinds: the *simple*, which consists of a thin, delicate, transparent sac, containing a pellucid fluid in all respects similar to the serum of the blood, and provided with long slender vessels evidently derived from the adjacent parts; the *multilocular*, where the cyst is divided into compartments or cells by processes given off from the internal surface and intersecting each other in various ways; the *included*, where instead of cells, the main cyst contains several smaller ones composed of a single lamella, which is evidently a reflection from the original sac. The simple cyst is seen particularly in the ovaries, the fimbriated extremities of the Fallopian tubes, the liver, and the brain—especially in the lateral ventricles of that organ in the old. The multilocular is common in the brain around old apoplectic effusions, in the ovaries, and in the cel-

lular tissue where subjected to pressure, as on the shoulders of porters, and the knees of chambermaids. The included are also found in the ovaries, and in the broad ligaments of the uterus. The contents of these cysts while healthy are clear, transparent, of a sero-albuminous character, and somewhat saline. In a state of disease, this fluid is variously altered—becomes turbid, thickened, discolored—is mixed with blood, flakes of fibrin, and fatty matter; contains substances not found in the healthy body, as pus, tubercle, or substances peculiar to certain parts of it, as cholesterine. In the multilocular cysts several of these substances may be found at the same time in different compartments. Thus, one shall contain serum, another pus, a third blood, a fourth tubercle, or fatty, meliceritous, or atheromatous matter.

These cysts are most frequently the result of a new formation, which is dependent on some perversion of nutrition brought about by inflammatory irritation; or they are constructed out of pre-existing textures—which may be serous, as in enlargement of the Graafian vesicles—or mucous, as in the kidneys and female breast, from obstruction of the excretory ducts—there being then a true transformation. When thus formed the cyst may have several coverings. Thus in the ovaries, the parietes may be separated into three layers, one derived from the serous capsule of the vesicle of De Graaff, another from the proper fibrous coat of the ovary, and a third from the peritoneal coat of that body. Serous cysts are liable to inflammation; the contained fluid undergoes various changes; the capsule becomes dense and fibrous, and irregularly thickened, or is converted wholly or partially into cartilage and bone. The effects of the cyst on the surrounding parts resemble those arising from hydatids.

Chapter xx—Is devoted to the *Heterologous Formations*, and is one of the longest and most elaborate in the book. The term heterologous is used to designate "certain morbid products, of a solid and semi-concrete consistence, which have no resemblance whatever, or at most a very remote one, to the natural, normal, or pre-existing tissues of the body."

The word heteroclite is employed in the same sense. According to the author's views, there are but five of these products, viz: tubercle, scirrhus, encephaloid, colloid, and melanosis. These are considered in as many separate sections. The parasitic animals, as hydatids and worms, and the calcareous concretions, are on the limits of this class of productions, if indeed they do not belong to it. Any arrangement must be imperfect in the present state of the science—

"Indeed, I am not certain that the term heterologous, as applied to these formations, is not altogether ill-chosen, and out of place, since most of them are found, when carefully investigated, to have a very close resemblance, in many of their most essential features, to the normal tissues of the body. Thus, encephaloid bears a striking similitude to the substance of the brain; melanosis, to the coloring matter of the skin; scirrhus, to the dermoid texture; tubercle, at least in some of its forms, to fibro-cartilage; and colloid, to the vitreous humor of the eye."—124, 125.

The common tendency of all these formations is to destroy the tissues in which they are located; hence they have been termed malignant. *Tubercle* is not usually classed among malignant productions; but in view of its extraordinary rapidity, and its fatality—causing one-third of all the deaths that occur—it must be regarded as among the most malignant. The author defines tubercle to be "a small, solid tumor, of an irregularly spherical figure, more or less opake, of a pale yellowish color, seldom exceeding the volume of a pea, susceptible of organization, and composed of a peculiar substance, which, sooner or later, undergoes a process of decomposition." But this definition really includes only two varieties.

Tubercle may occur in almost every organ of the body; but its particular situation varies in a considerable degree according to the age of the subject. From the researches of Lombard, Rilliet and Barthez, Louis, and others, tables of which are given by the author, it may be inferred,

—"first, that, in children, tubercles not unfrequently occur in different parts of the body, without existing in the lungs;

secondly, that they are more liable to affect the lymphatic ganglions than in adults; and, thirdly, that they have a tendency to attack a much greater number of organs simultaneously or successively. It is a singular circumstance that the spleen is seldom tuberculized in adults, whilst it is very often affected in children, in the proportion nearly of one to four. From the tables of Louis and Lombard, but particularly from that of the latter, it would appear that the liver is remarkably exempt from this disease at all periods of life; a result which is, however, strikingly at variance with the statement of Rilliet and Barthez, who found this organ affected seventy-one times in three hundred and fourteen cases. Papavoine observed the liver tuberculized in more than one-fourth of his autopsies, or in fourteen children out of fifty. The intestines are affected with nearly equal frequency at both periods of life."—127, 128.

The period most liable to this deposit is between twenty and forty. It may occur, however, at any age, and even during fœtal life. The law promulgated by Louis in 1825, has been verified by every subsequent observer, viz: that after the fifteenth year, tubercles are never found in any organ unless they exist at the same time in the lungs. Another well established law, is, that in children tubercles are secreted more rapidly and in greater abundance than in adults. Rilliet and Barthez find that the periods of childhood most liable to them are from six to ten years and a half, then from eleven to fifteen, next from two to five, and lastly from one to two and a half. Barlow thinks "that any organ is most liable to become the seat of tuberculous deposit, when its vascular and functional activity bears the greatest ratio to the other organs of the body." He supports this view by reference to the greater frequency of tubercle in the brains of children, or when that organ is relatively the largest; also in the chylopoietic viscera of older children; and in the lungs of youths at the time when these organs are attaining their complete development. It is further supported, he thinks, by the suspension of tubercular disease during pregnancy, and the absence of tubercles from such portions of the lung as have been compressed in cases of pneumo-thorax following phthisis.

This deposit is observed in many of the lower animals: in these, as in man, it occurs at all ages, and its most frequent site is the lung. It is also observed in birds, reptiles, and insects.

The composition of tubercular matter has been examined by numerous observers, and with very different results. The preference is given by the author to the analysis of Hecht, who found twenty-six parts of albumen, twenty-two of gelatine, thirty-four of fibrin, and thirty of water, in one hundred and twelve parts of dense tubercular matter. Thenard found in one hundred parts of crude tubercle ninety-eight of albumen, the remainder consisting of salts of lime and soda, with a trace of iron. Lombard found nearly the same proportions. But in chalky tubercle the proportions were just reversed, the salts being ninety-six and the animal matter four.

"The discrepancies in the results of the above analyses may be accounted for by supposing that the chemical constitution of tubercular matter varies, as no doubt it does, not only in the different stages of its existence, but also in different individuals, in different situations, and in different parts even of the same organ. It is reasonable to conclude, also, that it is modified, more or less, by the state of the solids and fluids, or, in other words, by the cachexy, or constitutional peculiarity leading to its formation. In all these respects tubercular matter bears the closest resemblance to serum, lymph, and pus, which are often remarkably altered in their chemical and physical properties by the nature of the affected tissue, the state of the system, and the concomitant inflammation. In the inferior animals, the composition of this substance presents, perhaps, still greater variety than in the human subject. In the ox, there is always an unusual predominance of earthy salts, and hence the extraordinary brittleness which characterizes the morbid product. In the turtle I have seen the tubercular substance of the color and consistence of calcareous moss, or what, in mineralogical language, is termed tufa. In the sheep, horse, and some other quadrupeds, on the contrary, the animal matter is generally much greater than the saline, especially in the early stage of the disease.' —129.

There is also a difference of opinion as to what particular texture tubercle is seated in. According to Carswell it affects more particularly the mucous membranes; Cruveilhier thinks it is originally deposited in the ultimate venous radicles, as a result of capillary phlebitis; others, in the elastic cellular tissue. It may occur on the surface of a membrane, or in the parenchyma of the different organs.

Tubercle is seen in different forms. Most frequently it occurs in little grains like millet seed, whence the name *miliary;* these by coalescing form tumors varying in size from a pin-head to a billiard-ball. These little masses are sometimes enveloped by a distinct capsule, and then constitute the *encysted* tubercle; this variety is very rare. Again, instead of being collected into masses of greater or less size, the heteroclite matter is *infiltrated* into the substance of an organ, and varies from the consistence of jelly (*gelatiniform infiltration* of Laennec) to that of fibro-cartilage. Lastly, instead of being diffused in the texture of a part, it is poured out on some surface, as that of a mucous membrane, in layers of greater or less thickness, constituting the *stratiform* variety, which stands next to the miliary in frequency. A variety of miliary tubercle which has attracted a good deal of attention, are the *grey granulations* of Bayle. These occur isolated or in groups, frequently in immense numbers; they adhere to the surrounding tissue and are encircled by red vessels which occasionally extend into them. After a time they lose their greyish opaline tint, and assume the appearance of the common miliary tubercle, with which they are nearly always associated—the change beginning in the centre. Bayle thought they were of a cartilaginous nature; Laennec regarded them as nascent tubercles, an opinion in which Louis and Rokitansky concur. Chapman, with apparent gravity, thinks to decide the question by calling them *tuberculoid.*

"To me the grey granulation seems to be merely a variety of the common tubercle, modified by the action of the affected part, the state of the blood, and the condition of the general health. Serum, lymph, and pus are modified in this man-

ner, and why should not tubercle be? To maintain that the grey granulation is merely a nascent tubercle, is, to say the least, not very philosophical. That it is liable to be transformed into the common yellow tubercle is certain, but that death may, and often does take place, before any change is effected, is equally true. The grey granulation may precede the yellow tubercle, or it may be deposited simultaneously with it. Under whatever circumstances it is found, it always contains a disproportionate quantity of animal matter, and is endowed with much greater power of resisting the influence of such agents as have a tendency to destroy it. It is evidently the product of a more healthy action; it indicates a better state of the solids and fluids; in a word, it is a more plastic, organizable substance than common tubercle."—133.

As to the origin of tubercle, the author looks upon it as altered blood-plasma, the effusion of which takes place under the influence of inflammatory irritation, preceded in nearly all cases by the tubercular dyscracia or cachexy.

"In the former edition of this work I expressed the opinion that tubercles are always of inflammatory origin, and a more thorough examination of the subject since has only tended to confirm this conclusion. The concomitant action is usually very languid, or so mild and imperceptible that extensive mischief is often done before the patient is aware of it. In this respect, the development of tubercles resembles that of a chronic abscess, which is rarely characterized by any of the ordinary phenomena of phlegmasia.

"The doctrine of the inflammatory origin of this disease is countenanced, if not actually established, by the following circumstances:

"First, by chemical analysis. The experiments of Hecht, the most satisfactory yet made, afford nearly equal parts of albumen, gelatine, and fibrin; substances which, whether they occur alone, or in combination with each other, are always to be regarded, when found upon the surfaces or in the interstices of the organs, as the result of inflammatory irritation.

"Secondly, tubercular matter, as before stated, bears a very great resemblance to spoiled, degraded, or cacoplastic lymph, which is an acknowledged product of inflammation.

"Thirdly, the deposit is often excited by cold, especially when conjoined with moisture, and by unwholesome, indigestible, or innutritious food. Dyspepsia frequently leads to the

same result. By the former are produced internal congestions; by the latter, a poor and impoverished state of the the blood, so favorable to the development of tubercle.

"Fourthly, in many cases the disease is attended or preceded by hyperæmia, or active congestion. This often happens in the lungs, the pleura, peritonæum, and lymphatic ganglions.

Fifthly, the doctrine of the inflammatory origin of this deposition derives great plausibility from what occurs in the inferior animals, from mechanical irritation. In the experiments of Cruveilhier, Kay, and Saunders, well-characterized tubercles were produced in a very short time, simply by dropping mercury into the trachea. Similar effects are frequently witnessed in miners, needle-grinders, and weavers, who habitually inhale gritty or irritating matter. Persons of this description are peculiarly prone to phthisis.

"Sixthly, scirrhus and encephaloid, in fact, all carcinomatous growths, are of inflammatory origin. All these products are derived from the blood, they gradually become softened, and they ultimately destroy the tissues in which they are situated. Scirrhus, like tubercle, contains fibrin, gelatine, and albumen.

"Seventhly, there is no appreciable deposit, secretion, or effusion in any of the shut sacs, cells, or cavities of the body, which is not, strictly speaking, the result of inflammatory action, though this may be so slight as not to attract attention, or to be unattended by the ordinary phenomena of that process."—135, 136.

The author also contends for the organization of tubercles. Lugol has detected blood-vessels in this deposit; Kingston has seen them with the microscope; and Macartney has demonstrated them by injection. The following circumstance we ourselves witnessed:

"In a lung which Dr. Bayless, at my request, last summer injected with size colored with vermilion, a number of tubercles exhibited the clearest possible evidence of vascularity. On cutting into a mass of this kind, a tubercle, about the size of a duck-shot, and of a light greyish color, was divided, from the centre of which the artificial fluid, which was still warm, ran in a small jet or stream, precisely as blood flows from a divided vessel."—136.

Additional evidence is furnished by the fact that these bodies often become yellowish in jaundice; also by their softening, which generally begins in the centre, and by their conversion into cretaceous or earthy masses, a change which may begin at any part. This organization, however, is not constant. The peculiar modified character of tubercle in some situations, as upon the mucous membranes of the bronchial tubes, seminal vesicles, and uterus, is opposed to it. In these situations the deposit is more curdy and friable, and contains more earthy ingredients.

"Within the last ten years I have examined not less than ten or a dozen specimens of organized tubercles of the kidney, spleen, peritonæum, and lungs, mostly of young subjects. The tubercles were of the miliary kind, and numerous vessels, loaded with florid blood, could be seen shooting into them in every direction, many of them penetrating a considerable distance into their substance. Their vascular supply would thus seem to be derived from the tissues in which they are deposited; and this, in the generality of cases, is no doubt true; nevertheless, there is reason to believe that they occasionally possess a self-organizing power, analogous to that of the adventitious membranes of the splanchnic cavities."—137.

The vessels forming the proper circulation of tubercle have never been seen by the author; but he asserts positively that he has frequently traced vessels into the mass from the surrounding tissues. Nor have they been injected.

"Granting this to be true, and what, it may be asked, does it prove? Are we reduced to the necessity of denying the vitality of a structure, because we cannot succeed in throwing foreign substances into its vessels? If this be a fair criterion, then we must conclude that the cornea, the crystalline lens, the membrane of Jacob, the inner coat of the arteries and veins, the endocardium, and the arachnoid tunic of the brain, together with the chorion and amnion, are not organized. But who would be so silly as to do this, when daily observation demonstrates that these textures are abundantly supplied with vessels, nerves, and absorbents, though none of these tissues can be detected by inspection, no matter what methods we resort to for the purpose."—138.

Microscopically, as well as chemically, tubercle seems to differ according to the part where it is deposited, and the period at which it is examined. When recent it exhibits cells and granules, like those of plastic lymph, but no fibres are perceptible. These cells possess but a low power of development, and instead of tending to a higher organization they more frequently recede to the granular or amorphous condition. Thus, at a later period, and after the mass has increased, it is found to consist almost wholly of granular matter, with some irregular granular corpuscles, and shrivelled and imperfect cells. This is especially seen in the caseous tubercle. This increase of the mass is rarely due to intra-cellular development, or the successive evolution of cell-germs, but to the super-addition or juxta-position of new particles. Now, between coagulable lymph, and chalky or friable tubercular matter, there occurs every variety; and as the departure from the former is less, the plastic force will be greater; so that we can conceive how sometimes tubercle may grow by intus-susception, and how sometimes it may be self-organized as contended for by the author.

Softening of tubercle, according to the author's views, is analogous to slow suppuration. The deposit by and by produces irritation in the tissues where it is situated; this irritation is soon communicated to the heteroclite mass, which, in consequence of its weak vital endowments, readily yields. Of this softening, and the excavations consequent upon it, and of some other changes in tubercles, we shall speak in connection with another chapter.

Melanosis has been seen by the author very seldom in his numerous autopsies, and therefore he thinks it very rare in this country. Like tubercle it occurs at all ages, though it is most frequent in the old; like it, it affects the lower animals; like it, also, it is hereditary both in the human subject and the lower animals. It is more common in white horses and cattle than colored ones. Barruel and Hecht found it to contain fibrin, united with the coloring matter of the blood, and three distinct fatty substances. Foy has found in it albumen, fibrin,

a carbonized principle supposed to be altered cruor, water, iron, and salts of lime, soda, and magnesia. The microscope shows it to consist of a fibrous network in the meshes of which are pigment cells, elongated and sometimes caudate, containing yellowish and blackish granules. It is collected in masses (tuberoid form); spread out in sheets (lamellated) and streaks (ramiform); deposited in points (punctiform); diffusely infiltrated.

Several melanotic masses may be agglomerated, constituting a rough and lobulated tumor, which in man rarely exceeds the size of the closed hand, but in the horse attains the weight of many pounds. These tumors have a thin covering formed out of the surrounding textures. They are also intersected by fibrous processes sent off from this covering or derived from the cellular tissue in which the morbid mass was originally deposited. Veins and arteries, the former predominating, ramify over the surface of the tumor, and are distributed to its interior upon the fibrous intersections; the veins are large and tortuous, and both arteries and veins are so weak that they give way in attempts to inject them. The melanotic matter itself contains no vessels, or, in other words, is not organized. On serous surfaces these tumors are sometimes pedunculated like polypes, and are always surrounded by a cyst. Rarely the melanotic matter is found in a *fluid* state, presenting the color and consistence of black ink; it has been thus observed in the serous cavities, lungs, and urinary organs.

"The *tissues* most prone to the melanotic deposition are, beyond all comparison, the cellular and adipous. Large masses of this substance are often met with under the skin, particularly of the trunk, in the mediastinal cavities, in the folds of the mesentery and omentum, and around the kidneys. In horses, the subcutaneous substance of the buttock, anus, vulva, and tail, is a very common seat of the disease. Of the different organs, the liver, lungs, spleen, eye, kidneys, and ovaries, may be enumerated as being most frequently affected. The lymphatic ganglions, especially those of the bronchiæ, are also very liable to it. The bones, fibrous and serous membranes, the pancreas, arteries, and salivary glands, are seldom impli-

cated; while the brain and spinal cord, the nerves, the veins, the muscles and their tendons, the cartilages, the synovial and mucous membranes, the uterus and mammary glands, the thyroid and thymus bodies, the prostate, testicle, seminal vesicle, and supra-renal capsule, enjoy almost an entire immunity from its invasion. Melanosis of the heart has been noticed by Gohier, Fawdington, Breschet, Halliday, Cruveilhier, Cullen, and Carswell; but this is the only portion of the system of involuntary muscles in which this disease has hitherto been found."—145.

As we have a tuberculous, so we may have a *melanotic*, diathesis. Cases are recorded where, either simultaneously or successively, a great number of organs and tissues presented this lesion.

"One of the most remarkable of the kind was published some years ago by Dr. Norris, an English physician. In this instance, not only was the external surface extensively studded with black tumors, but immense numbers were seen scattered over the stomach, intestines, mesentery, and omentum; the lymphatic ganglions, kidneys, pancreas, and liver were also more or less affected; the lungs were thickly mottled throughout the greater part of their texture; and the heart was literally encrusted with them, both externally and internally. The brain was healthy, but the dura mater was deeply involved."—146.

Melanosis is frequently combined with scirrhus, rarely with tubercle. When alone, it may remain stationary for a long time, giving rise to no inconvenience save what is caused by its size and situation. This has led many to believe that *per se* it is not malignant. When the melanotic tumor ulcerates an intractable sore is produced, having hard ragged edges, and discharging black, inky matter, mixed with more or less of blood, pus, or thin fluid from the adjacent structures. When removed, the tumors re-appear in the same place, or in some internal organ. The disease does not seem to be communicable by contact, or inoculation.

"Of the *causes* of this disease, and of the states of the system which predispose to it, nothing is known with any degree

of certainty. That the melanotic matter is derived immediately from the blood, both anatomical examination and chemical analysis abundantly show; but how far, or in what respect, this fluid is altered before the deposition is effected, are points in the history of this disease concerning which pathology and physiology are equally silent and undetermined. If we remember that melanosis is essentially composed of the same elements as the coloring matter of the skin and of the choroid coat of the eye, we may be allowed to suppose that this substance, existing in an unnatural quantity in the blood, is deposited, by an aberration of the nutritive functions of the vessels, into organs and tissues in which it is not found in the normal state. Noack regards the black matter as a secretion from the veins, an opinion in which he is joined by Dr. Hodgkin. This view, however, is entirely inadmissible on physiological grounds, inasmuch as there is no instance, so far as we know, except in the liver, in which the veins perform such an office."—146, 147.

We come next to *Scirrhus.* A good deal of confusion exists among pathologists as to the nature of this formation; partly because all malignant diseases whatever have been termed cancer; and partly because scirrhus, besides presenting some varieties, often co-exists with encephaloid. To avoid this confusion, the author defines scirrhus to be "a hard, crisp, opake substance, of a light greyish color, with dull yellowish, fibrous intersections, organized, liable to lancinating pain, occurring for the most part after the middle period of life, and passing sooner or later into ulceration."

Like the morbid products we have already noticed, scirrhus presents itself in different forms; as a tumor solitary or otherwise, an infiltration, or a lamella. The infiltrated form is infrequent, and occurs most often in the lungs, liver, uterus, kidney, and bones; the lamellated affects the submucous cellular tissue of the œsophagus, stomach, and bowels.

"In the *tuberoid* form, the most common, as we have just stated, of all, the heterologous substance forms small circumscribed nodules, the number of which, as in the liver, is sometimes very great, and the consistence of which varies between fresh pork and fibro-cartilage. Their size and shape are much

influenced by the nature of the tissues in which they are developed, and by the resistance which is offered to their progress. Single tumors of this kind are rounded, ovoidal, or conical; when, on the contrary, several are agglomerated together, they are generally very irregular, angular, and more or less lobulated. In their size they vary between a mustard-seed and an adult head, their average being that of a billiard-ball, a lemon, or an orange."

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"A scirrhous tumor creaks under the knife, is opake, firm, inelastic, and of a white bluish color, with various shades of grey, rose, and drab. These tints are most conspicuous when there is an admixture of bile, blood, or pus, as sometimes happens when the heterologous matter is very old. Thin slices of it are found to be semi-transparent, flexible, and elastic; when dried, they exhibit nearly all the properties of the horny tissue. Fibrous intersections, generally of a slight yellowish color, are seen to pervade the diseased mass, starting from the centre as their common nucleus, and radiating thence towards the circumference. These lines are merely the remains, in most cases, of the cellular substance of the affected part, and are often so arranged as to resemble very closely the fibrous structure of an unripe pear or turnip. A creamy-looking fluid is occasionally incorporated with the heteroclite mass, and constitutes the most decided evidence of its carcinomatous nature."—148, 149.

These growths occasionally contain hydatids. Serous cysts are oftener found, their contents consisting of thin, gummy, meliceric matter, and even pus. Effusions of blood are also observed, and these are thought by some to precede the formation of the cysts. A characteristic of this growth, is the absence of an enclosing capsule; the cellular membrane around old tumors is sometimes condensed, but never forms a proper covering. Scirrhus is subject to some variations in structure, and these have received different names. The *mammary sarcoma*—so called from its resemblance to the female breast—is lobulated, and intersected by fibrous bands of a dull white, bluish grey, or pale straw color; the *pancreatic*—named from its resemblance to the pancreas—consists of lobules, resolvable into granules, and separated by bands of cel-

lular tissue; the *lardaceous*—resembling a section of fresh pork—has little of the fibrous or linear arrangement of ordinary scirrhus, and the malignant disposition is not so marked in it, as it often remains in the crude state for years; the *reticular*, one of the most common, distinguishable by its white or bluish reticular figures, large bulk, and tendency to become lobulated. The solid chemical constituents of this matter, according to Foy, are albumen (42 parts in 100), white and red fatty matter, fibrin, iron, and salts of lime, soda, magnesia, and potash. The solid materials found by Hecht in matter from a scirrhus breast were gelatine, fibrin, fatty matter, and a small quantity of albumen; in matter from a scirrhous uterus, they were gelatine, fibrin, and fatty matter. These differences can only be reconciled by supposing that the composition of this matter, like that of tubercle to which it is analogous, varies according to the part of the body where it is deposited, and the stage of the disease.

Scirrhus rarely appears before the age of *thirty*, and this marks it from all the other heterologous formations. Its favorite period is between the fortieth and fiftieth years. It is hereditary. Very often it succeeds to some external violence, to syphilitic disease, suppression of the menses, and repulsion of herpetic eruptions. Quite as often there is no assignable cause.

"Scirrhus sometimes attacks a considerable number of organs in the same individual, either simultaneously, or in gradual succession. In females, it is not uncommon to find both the breast and the uterus involved at the same time. It not unfrequently co-exists with encephaloid, tubercle, melanosis, and hydatids.

"The parts of the body most liable to scirrhus are such as have a glandular structure. In females, it is most common in the breast and uterus; in males, in the testicle, penis, stomach, and rectum. In both sexes the lips, nose, and liver may be mentioned as frequent seats of it. The spleen, lungs, and kidneys are seldom affected. It is also extremely rare in the bones; and it is doubtful whether it ever occurs in the cartilages, in the serous, synovial, and fibrous textures, and in the muscles of voluntary life."—151.

According to Elliotson it attacks primarily parts not essential to life, and glands the functions of which have ceased, or have never been performed. It affects particularly the breasts of women past child-bearing, and particularly the breasts of those who have never had any children. It affects the breasts, uterus, ovaries, and testes; parts, he remarks, "not necessary to life, being all for the sake of the next generation, and not for ourselves,—except, indeed, as a gratification!"

In relation to the proximate cause, Dr. Gross does not agree with Adams, that scirrhus depends on the presence of a parasitic animal, the *carcinomatous* hydatid; nor with Hodgkin, that it arises from the growth and multiplication of serous cysts. He believes it to arise, like tubercle, from a specific inflammation which produces a plastic effusion analogous to the fibrin of the blood.

"The effusion thus produced takes place in the cellular element of our organs, the proper structure of which it gradually transforms, effaces, or destroys. That this is the case, is sufficiently evinced by what happens in the liver, kidney, and pancreas. Cases occasionally occur in which the heterologous substance can be discovered in different stages of its development, so as to enable us to determine the manner in which it is deposited. Thus, in the liver, the scirrhous matter generally appears in very minute, circumscribed points, corresponding with the granulations which are so abundantly found here in the natural state. At first, there is merely a change of color, the granulations exhibiting a pale greyish aspect, without the slightest deformity or augmentation of volume. At a somewhat later period, the little tumors are observed to be of a white milky hue, hard, dense, crisp, opake, irregularly spherical, and perfectly devoid of the original structure. Now these alterations, it is quite plain, can only be accounted for on the assumption, that, in proportion as the heterologous matter is deposited into the cellular texture of the acini of the liver, their proper parenchymatous substance, whatever it may be, together with their vessels, is obliterated by absorption, the pressure which the accidental secretion produces being fully adequate to bring about this result. Similar phenomena are to be witnessed, as scirrhus is being developed in other organs."—155.

Scirrhus is generally slow, especially when it occurs in the aged. A scirrhous breast at forty-five will run a much more rapid course than one at sixty or seventy. The irritation which it excites in the surrounding structures is also of the chronic character, leading to induration and contraction, and hence forming hard, knotty, corrugated swellings. Scirrhus, like tubercle, undergoes softening, which may commence in any part of the morbid mass; but ulceration usually sets in before it is completed. The emaciation, as remarked by Williams, accompanying the latter stages, is more extreme than in any other disease. The tissues and organs become exsanguine, and suffer both in composition and bulk. We conclude our notice of this section with the following description of an external scirrhous growth:

"Scirrhus is recognized by its circumscribed character, its hardness and incompressibility, and by the peculiar nature of the accompanying pain. The hardness is greater than that of any normal texture, save the cartilaginous and osseous. The pain is usually of a gnawing, lancinating kind, darting through the swelling in different directions, and coming on in irregular paroxysms, which, as the disease progresses, increase both in frequency and violence, as well as in duration. Sometimes it is prurient, hot, burning, or scalding, and is then commonly more permanent. At first, the tumor is movable, distinctly circumscribed, and the skin over it perfectly natural; by and by, however, it contracts adhesions, and soon becomes fixed and less defined, at the same time that its cutaneous covering experiences various alterations, both as respects its smoothness, its color, and its consistence."—156.

Encephaloid—the medullary sarcoma, fungus hæmatodes, soft cancer, medullary fungus, and spongoid inflammation of various authors—is allied to the last affection, with which, and also with tubercle, melanosis, hydatids, and other morbid growths, it often coexists. Unlike scirrhus, however, it occurs in early life as well as late, and is remarkably rapid in its progress. The lamellated and infiltrated forms are infrequent.

"In the tuberoid *variety* the heterologous matter appears in the form of a circumscribed tumor, from the size of a pea to that of an adult head. In its shape it is generally irregularly rounded, ovoidal, or even quite flat, according to the amount of pressure exerted upon it by the surrounding parts. It is composed of different lobules, which are enveloped by a thin covering, and separated from each other by delicate membranous partitions. The outer covering, evidently derived from the neighboring cellular tissue, is usually not more than half a line in thickness, easily torn, semi transparent, and of a light rose color. From its inner surface are detached numerous processes, which, dipping into the morbid growth in various directions, form so many cavities for the reception of the new deposit. These septa, which are sometimes remarkably rough and shreddy, always become more obvious after the pulpy mass is squeezed out. The cells which they form by their intersections are subject to much variety, and hence the peculiar lobulated shape which characterizes the morbid growth when occurring in parts that offer little or no obstacle to its extension."—156, 157.

The external covering is sometimes of new formation. The morbid growth is liberally endowed with blood-vessels, which are extremely large and tortuous, the veins being most numerous. Cavities containing pus, serum, or sanious fluid, are often found in the interior; and sometimes clots of blood, from rupture of the vessels, which, like those of melanosis, are exceedingly fragile. The color is generally cineritious, but runs through various shades of red and white. The consistence varies from that of cream to that of fibro-cartilage; but generally is about equal to that of the fœtal brain. Both color and consistence often vary not only in different growths, but in different parts of the same growth. Names have been given to some of the variations of structure: thus we have the hæmatoid (fungus hæmatodes of Hey) composed partly of erectile tissue, and resembling the placenta, or a clot of blood; the solanoid or potato-like; the nephroid or kidney-like; the napiform or turnip-like; and the hyaline, or, as the author calls it, the fasciculated. In chemical composition encephaloid does not differ from scirrhus, except in the presence of osmazome, and the smaller quantity of salts.

This disease occurs at all periods from fœtal life to old age; but belongs especially to early life. Of one hundred cases, collected by the author, much the largest proportion was below the fortieth year. Its most favorite seats are the eyes, bones, testicles, liver, lymphatic ganglions, and the subcutaneous cellular tissue. It has also been seen in the veins of the liver, kidney, and uterus, and may be engrafted on other growths. Encephaloid of the eye is almost peculiar to childhood. A remarkable feature of the disease is its rapid reproduction. When a tumor has been removed, the disease re-appears in the same spot, in the adjacent structures, or in the internal organs. Travers states he never knew a patient, upon whom he had operated for this affection, survive four years. It is also apt to follow the removal of a scirrhous tumor. As to its origin nothing is known. The author conjectures it to depend upon an aberration of secretion.

"The circumstance that this substance has been found in the blood, is of no small moment in the discussion of this question. It would lead to the inference that, when the sanguine fluid is surcharged with it, the cerebral matter, instead of being deposited in the brain, spinal cord, and nerves, is poured out in the meshes of the cellular element of one or more of the organs of the body. This conjecture is so much the more plausible, as encephaloid disease often arises without any assignable cause, is sometimes decidedly hereditary in its tendency, and almost always exists in several situations at the same time. Chemical analysis, also, comes to our aid here, bringing to light the important fact that the cerebral tissue and the heterologous deposit are essentially alike in their character."—162.

Analogy, he thinks, also supports this view. For example, cholesterine, peculiar to the biliary organs, has been found in a hydrocele, a tumor under the tongue, an abscess of the jaw, an ovarian cyst, and in other places.

"Encephaloid disease, after having attained a certain development, may remain stationary for years, unaccompanied by the slightest uneasiness, until the part receives some injury, when it often grows with frightful rapidity. When seated

in the subcutaneous cellular tissue, the tumor that is thus formed is at first quite movable, smooth on the surface, and devoid of sensation; but gradually, as the enlargement progresses, it becomes stationary, irregularly lobulated, elastic to the touch, and more or less painful. If allowed to proceed, the diseased mass has a tendency to open and protrude, generally by ulceration, sometimes by sloughing, and occasionally by the bursting of an abscess situated in its interior. In either case, the exposed surface presents a dark reddish fungous appearance, is highly sensitive, extremely vascular, very prone to hemorrhage, and constantly bathed with a thin, fœtid, irritating, sanious fluid, the quantity of which is sometimes quite profuse. In many instances pure blood is effused, caused by a rupture of some of the vessels of the morbid growth; and this may be so obstinate and copious as gradually to destroy the patient. Occasionally there is a discharge of thin, glairy fluid, resembling the white of egg. Such sores, besides being always highly disagreeable, never heal, from the inability of the parts to form healthy granulations. Sometimes the ulcerated mass sloughs as completely away as if it were dissected out; but these cases are uncommon, and are soon followed by a re-production of the heterologous substance."—164.

Meanwhile the lymphatic glands of the neighborhood become affected, either by sympathy or direct absorption of matter; whilst the vital powers speedily give way under all the symptoms of the cancerous cachexy.

The last of the heterologous formations is the *Colloid.* Carswell speaks of it under the head of hard cancer; Hodgkin thinks it identical with encephaloid. The author believes its characters sufficiently distinctive for separate consideration. He thus points out these characters:

"Colloid is composed of two distinct elements, bearing to each other the relation of containing and contained parts, and differing, consequently, very widely in their physical and chemical properties, as well as in their origin and mode of arrangement. The first may be considered as the fundamental structure, the base, or frame-work, inasmuch as it gives form and solidity to the whole mass. It is made up of a fibrous tissue, hard, firm, slightly elastic, and of a dull whitish, or pale greyish color, the band-like filaments of which inter-

sect each other in every direction, so as to enclose areolæ, cells, or spaces, calculated to contain the jelly like matter that is deposited within them. The vacuities thus formed present every intermediate size, between a grain of sand and a common marble. In a specimen in my possession the smallest cells are hardly as large as the most delicate pin-head; some are as big as peas, and a few are of the volume of a Lima bean. In their figure they are rounded, ovoidal, or angular; many of the most capacious are multilocular, or divided by their fibrinous septa into different compartments. In regard to their number, the loculi are too variable to admit of any definite statement. Hundreds frequently exist upon a surface not more than an inch square, and, in masses of large size, the probability is that there are myriads, many of them so minute as to be invisible with the naked eye."—166.

These cells are lined by a delicate membrane of a serous nature, connected to the fibrous structure by short cellular tissue; they communicate with each other.

"The other grand constituent of this morbid growth is an unorganizable product, the consistence of which varies from that of soft jelly, or a solution of starch, isinglass, or arrow-root, to that of custard, half-dissolved glue, or semi-concrete albumen. It is generally of a pale straw color verging on green, perfectly clear, transparent, slightly tremulous, and somewhat tenacious or clammy. In the older cells it is sometimes as firm as moist cheese or the white of a boiled egg, opake, and of a light yellowish hue, interspersed with dark points. It has also been found of a reddish color, similar to that of currant jelly, and Cruveilhier has described a variety of it which is of a pearly whiteness, with a granular fracture and feel, and the chemical constitution of caseum. Whatever, however, may be its appearance or consistence, it has seldom any adhesion to the containing cyst, and is therefore always easily enucleated. It is only when the matter is very hard, or intermixed, as it sometimes is, with flakes of lymph, that it is detached or scraped away with difficulty. Müller with the aid of the microscope twice observed acicular crystals in the jelly-like matter of preparations which had been preserved in spirits of wine; and on another occasion he saw caudate corpuscles in a colloid cancer of the mammary gland."—167.

Colloid is plainly organized, but whether its vessels are of new formation, is not known. No analysis has been made of it. The jelly-like matter contains no gelatine or casein, and undergoes no change in spirits of wine.

Colloid occurs in masses, disseminated through an organ, or solitary; and as an infiltration. The tumors are occasionally of large size; the author has one weighing about twenty-five pounds. This growth is limited in its seat; the structures most liable to it are the alimentary canal, particularly the stomach and rectum, the omentum, ovary, lower jaw, and bones of the extremities. It occurs most frequently from the thirty-fifth to the fiftieth year. It has been seen by the author in quadrupeds.

"How this disease originates, or what the causes are under the influence of which it is developed, we are entirely ignorant. Its progress is usually slow, except when the tumor is very vascular, when it is apt to grow with great rapidity. It manifests no disposition to ulcerate, as is the case with scirrhus and encepha'oid; is never the seat of hemorrhage or much pain; the general health usually holds out well; and the countenance rarely acquires that sallow, cadaverous hue so common in some of the other forms of carcinoma."—170.

The microscopic character of the last three growths is essentially the same. They all consist of nucleated or nuclifer-ous cells, contained in a fibrous or areolar structure. In scirrhus the fibrous matter is very abundant, forming the bands or striæ visible to the naked eye. In encephaloid, the fibrous structure is more delicate, and the cells, which are very numerous, are globular, like those of scirrhus, or elliptical, or spindle-shaped and caudate. In colloid, the fibrous structure is also apparent, but the cells are not juxta-posed as in scirrhus; they are encased one within the other, whilst free nuclei or cyto-blasts are observed in the areolæ. The cellular structure, as has been seen, prevails in melanosis. And there can scarcely be a doubt, that if tubercle were examined at a sufficiently early period, it would constantly be found to possess a cellular organization. Even in the caseous tubercle, after

changes have unquestionably taken place, imperfect cells and corpuscles are observed. Indeed, if we must adopt the "cell-theory," will it not be found applicable to all growths, abnormal as well as normal? Such a result may be confidently anticipated from further researches.

We here close our analysis of the first part of Professor Gross's volume. We have occupied more space than it was our intention to; but it so grew upon us, so many things presented themselves for notice, that we felt, not that we ought to say less, but that we ought to say much more. In a subsequent paper or two, we shall notice the second part devoted to special pathology. C.

SELECTIONS

FROM

AMERICAN AND FOREIGN JOURNALS.

On the Acetate of Lead in Alvine Discharges.—Dr. Corrigan thus expresses himself in reference to the powers of this medicine in diarrhœas occurring towards the close of fever:

"Since I received a communication from Dr. Bardsley, recommending the trial of acetate of lead in that form of diarrhœa which comes on towards the termination of fever, and generally ends in ulceration of the Peyerian glands, I have made several clinical experiments with the view of ascertaining the powers of this remedy. I have found it exceedingly useful in controlling superabundant secretion in numerous instances. I have experienced the best effects from its employment, not only in the diarrhœa which accompanies ulceration of the mucous glands, but also in that species of diarrhœa which occurs at an earlier period of fever, and by means of which nature attempts the relief of intestinal congestion. Of its great value in the treatment of cholera I have already spoken; indeed, I do not know of any remedy by which inordinate fluxes from the bowels, whatever may be their nature, are so efficiently treated. The same remarks will apply to super-secretion from the lungs. In cases of phthisis attended with such copious secretion as to threaten suffocation, it is very beneficial: its effects are equally remarkable in chronic bronchitis with copious expectoration, and you are all aware of the great efficacy it possesses in checking hæmoptysis. I have been in the habit of prescribing it in combination with laudanum and wine vinegar; the latter I have added on the recommendation of Dr. Thompson, of London."—*Medical Times.—Ranking's Abstract.*

Statistics of the frequency of Cardiac and Pulmonary Complication in Acute Rheumatism. By P. N. Latham, M. D., Fellow of the Royal College of Physicians, &c.—The following remarks embody the experience of Dr. Latham, as related by him in the recently published and most valuable work, before alluded to. He observes that between the years 1836 and 1840, both inclusive, he met with 136 cases of acute rheumatism, of which 75 were males, and 61 were females.

Of the 75 males, the heart was affected in 47, unaffected in 28. Of the 47 cases, the disease was confined to the endocardium in 30, to the pericardium in 3, and affected both simultaneously in 7. In 7 others, although the heart was undoubtedly affected, the exact seat of the disease was uncertain.

Of the whole number of males in whom the heart was thus affected, 3 died, and in these 3 both pericardium and endocardium were inflamed.

Of the 61 females, the heart was affected in 43, and not so in 18. Of the 43 cases, the seat of the disease was the endocardium alone in 33; the pericardium alone in 4; and both membranes in 4; the exact seat of the disease was doubtful in 2. None of these females died.

The account therefore of both males and females will stand thus:

No. of Cases	136
Heart exempt, - - - - -	46
Heart affected, - - - - -	90
Seat of the disease in the heart:	
Endocardium alone in - - - -	63
Pericardium alone in - - - -	7
Endocardium and pericardium in -	11
Doubtful in - - - - -	9
Deaths - - - - - - -	3

Of the 63 patients who suffered from endocarditis, and who became convalescent, auscultation still revealed the fact, that after the inflammation had ceased, the membrane recovered complete integrity only in 17, and that it remained permanently uncured in 46. Of the 30 males, the endocardial murmur ceased entirely only in 8, while it remained as long as they continued under observation in 22. Of the 36 females, it ceased entirely only in 9; and remained in 24.

In the 136 cases which form the basis of this inquiry, the

heart was inflamed in two-thirds of the whole; the lungs only in about 1 in 5. In these cases, 24 in number, the pulmonary affection was severe; they consisted of bronchitis 8 cases; of pneumonia 13; of both combined 9 cases; of pleurisy 2. Of these 24 cases, 2 proved fatal.

Of the 46 cases of acute rheumatism, in which there was no heart complication, the lungs were likewise free in 6, or in 1 in 9 cases. On the other hand, in the 90 cases in which the heart was affected, pulmonary disease also occurred in 1 in 5.—*Ranking's Abstract.*

Case of Ileus; Portion of Intestine expelled by Stool. Recovery. By Dr. Nagel, of Lemberg.—K. J., a servant, had always enjoyed good health till within the last few years, when he became subject to frequent attacks of colic. On the evening of the 12th Feb., 1843, he was seized with violent pain at the lower part of the abdomen, accompanied with shivering, and frequent vomiting and purging. On admission into the hospital, on the morning of the 13th, he was in the following state: head hot and painful; tongue foul; thirst; abdomen swollen, and tender to the touch; skin dry; pulse full, hard and frequent; vomiting, with watery stools, tinged with blood. (Antiphlogistic treatment.)

The symptoms continued much the same till the 16th, when they diminished in intensity, and the stools were no longer tinged with blood. On the 19th, there was violent tenesmus, accompanied on the 23d with prolapsus of a portion of intestine, which, however, was reduced without causing pain.

On the 26th, the patient free from fever, and altogether in a satisfactory state; passed by stool a portion of intestine, 20 inches long, and at some points 2 inches broad; it consisted of a portion of the ileum, the cœcum, appendix vermiformis, the whole of the ascending arc and a portion of the transverse colon. The mucous membrane was everted, of a brownish color, striated with black, especially at the cœcum; it was soft and easily removed; the peritoneal coat was likewise of a brown color, and corroded, leaving bare the muscular coat, which was also destroyed at some points; for some days after, there was slight pain at the lower part of the abdomen; but on the 23d of March, the patient left the hospital perfectly cured.—*Gazette Medicale, and Edinburg Monthly Journal.—Ibid.*

Syphilis.—M. Ricord observes that the syphilitic poison is eminently alterant and disorganizing, that it produces a manifest alteration in the elements of the blood, and that the essence of the disease is hyposthenic. He reiterates his former denial that any mode of administering mercury after an infectious coition will enable us to secure the immunity for ever of the system from constitutional syphilis. He denies also that mercury produces fever, or causes falling off of the hair; on the contrary, it prevents the latter, and when fever occurs, it behooves the practitioner to look carefully to the lungs and other vital organs. In enumerating the accidents caused by mercury, he cites the case of a man under mercurial treatment, who died of suppuration of the brain, where mercury was obtained after death from the brain by chemical analysis. In a course of lectures on the subject of syphilis by M. Lallemand, now publishing in the "Medical Times," many very important points in reference to the transmission of the disease congenitally are strongly insisted upon, and illustrated by cases. Children are affected with syphilis without the mother ever having exhibited any symptoms, in which case the transmission must be by the father, who at the time of, or for some years previous to the conception of the child, may not have exhibited any evidence of the disease. Cases are detailed of lupus after primary syphilitic and gonorrheal affections; and of the most hideous leprosy, cured by antivenereals; and others tending to prove, to the contrary of the prevailing opinion, that venereal affections, when neglected or badly treated, are as fatal as formerly.—*Ranking's Abstract.*

Uterine Hemorrhage.—Few subjects connected with obstetrical science have created a greater sensation than the proposal of Drs. Radford and Simpson, to substitute extraction of the placenta, before the child, in certain cases of unavoidable hemorrhage, for the old established rule of turning. It was not to be expected that a proceeding of so novel a character, and one so opposed to ordinary notions of correct practice, would be allowed to pass without criticism, and we accordingly find that it has met with the opposition of several accoucheurs of eminence, among whom we may mention Drs. Lee, Ashwell, &c. Of these, Dr. Lee has taken the most prominent part, having originated a controversy with Dr. Simpson, the heads of which we shall endeavor to reproduce.

In the first paper, published in the "Medical Gazette" of Sept 19, and containing the details of eight successful cases of placenta prævia, Dr. Lee condemns the new practice in the strongest terms, not only as opposed to the principles derived from the anatomical relations of the uterus, and placenta, and to the results of his own experience, but as not warranted even by the tables upon which Dr. Simpson has sought to establish the necessity for its adoption. This table Dr. Lee pronounces to be altogether fallacious, and adduces the evidence of Dr. Ramsbotham to show that Dr. Simpson has made the important error of mistaking the number of the infants lost for that of the mothers.

In reply to this communication, Dr. Simpson examines the objections of Dr. Lee seriatim. To the first of these, namely, that Dr. Lee sees no necessity for departing from the established rule of practice, he objects that if the result of the eight cases detailed by Dr. Lee was the expression of the real average of maternal danger, he should be the last to propose an alteration; but in order to show that such is not the case, he takes 61 cases which occurred to Drs. Lee and Ramsbotham, in which turning was adopted. Of this number, 24 mothers, or 1 in 2 , were lost, a mortality which, as he observes, is equal to that of the Cæsarean operation. In answer to the accusation of Dr. Lee, that he (Dr. S.) advises extraction of the placenta in preference to turning, in all cases indiscriminately, Dr. Simpson replies that such is not the fact, but that he recommends the practice only under the following circumstances: In severe cases of unavoidable hemorrhage, complicated with a rigid and undilated os uteri, in which turning would be either impossible or hazardous; in most primiparæ; in unavoidable hemorrhage, with premature labor, and an undeveloped condition of the os and cervix; in placenta presentations with distorted pelvis; in cases where the extreme exhaustion of the patient forbids turning, and when the fœtus is ascertained to be dead, or is premature, and not viable. In support of these views of the necessity of the new proceeding, eleven cases are quoted from Dr. Lee's own practice, in which unavoidable hemorrhage was complicated with rigid and undilated os uteri. Of these eleven, three mothers only survived, and of these, two very nearly perished. Dr. Lee's third objection to extraction of the placenta, that it was not adopted by the older accoucheurs, is met by Dr. Simpson with the very obvious plea, that if any novel practice is to be condemned, simply because it was not thought or approved of by the ancients, there would be at

once an end to all improvement. Dr. Simpson also demonstrates the error of Dr. Lee in asserting that Portal, one of the old authors referred to, never attempted to detach the placenta in any case, by quoting that author's own words, in which the fact of his having abstracted the placenta before the child is unequivocally expressed. Dr. Lee's fourth objection is one which apparently carries great weight, being this—that by the new practice the child must inevitably be sacrified. To this Dr. Simpson replies that, according to Dr. Lee's own showing, 65 per cent. of the infants perished under the operation of turning, in actual numbers 15 out of 23 in which the result is mentioned; while of 106 cases previously reported (Lond. and Edin. Monthly Journal, March, 1845), in which the placenta was spontaneously expelled before the child, 31 per cent. were saved, so that in this respect there is too little difference in mortality, to found an objection upon. "Besides," says Dr. Simpson, "the cases in which extraction of the placenta is to be advised, are exactly those in which the fœtus may be expected to be lost under any mode of treatment."

In answer to Dr. Lee's objection, upon the score of inaccuracy, Dr. Simpson refers the reader to a series of letters from Dr. Ramsbotham and Dr. Lee, which show that inaccuracies have crept into the statements of both parties, and that in this respect Dr. Lee is not less chargeable than his opponent.

The subsequent number of the same Journal contains an additional paper by Dr. Lee, in which 89 cases by Dr. Merriman, and 19 by Giffard, are tabulated. In the former of these there is evidently a mistake; 59 mothers out of 78, in which turning was adopted, being represented as having perished; while Dr. Merriman expressly states that he lost only 19; the numbers should clearly be reversed, but even this would make a maternal mortality of 1 in 4, not much short of that asserted by Dr. Simpson. In the 19 cases related by Giffard 5 died, also about 1 in 4, but these, Dr. Lee observes, perished from loss of blood prior to turning, and not in consequence of that operation.

It must be obvious, from the above imperfect abstract of this important controversy, that neither party is exactly in a condition to establish his position; statistical data, of *undoubted* accuracy, being absolutely necessary for so doing.—Looking, therefore, upon the question as one still undecided, we shall proceed to mention the opinions of other writers

as to its feasibility, and to record the individual experience of those who have adopted the practice of Dr. Simpson.

Dr. Ashwell expresses his doubt of the correctness of Dr. Simpson's assertion, that the maternal deaths under the operation of turning in unavoidable hemorrhage are as high as 1 in 3. He states that in his own practice, he has lost only 2 out of 20; and that in the practice of the lying-in charity of Guy's Hospital, 2 cases in 14 only proved fatal. This writer also questions the fact upon which, as we have before said, Dr. Simpson bases the propriety of his operation, viz: that the blood in hemorrhage from placental presentation comes from the detached placenta. He shows satisfactorily that Dr. Lee is correct in denying the possibility of such an occurrence, as, in the first place, the decidual vessels are too small to allow of the terrific gushes of blood which are witnessed in this form of hemorrhage, and, moreover, that in consequence of the cellular structure of the placenta, its meshes become almost necessarily plugged by coagulated blood. As regards the new practice, Dr. Ashwell observes that it rarely requires to be employed, and never can be without risk to the mother, and certain death to the child. He thinks that in all cases in which the placenta could be safely removed, a little patience would also accomplish sufficient dilatation of the os uteri to admit of turning.

An opinion similar to the above is also expressed by Mr. Crowfoot, who has been fortunate enough not to lose a single patient in eleven cases of turning under unavoidable hemorrhage. Of the infants 4 perished. In two other cases, however, in which, from the quantity of blood lost, the fœtuses were evidently dead, Mr. Crowfoot admits that he should have advised extraction of the placenta had he been aware of its effect upon the hemorrhage. Mr. Newnham, of Farnham, likewise offers a somewhat qualified opposition to the practice, thinking it advisable in some cases where it may be necessary to diminish the size of the head in consequence of deformed pelvis; objecting to it as a general rule. It must, however, be remembered that neither Dr. Simpson nor Dr. Radford contends for its general operation.

The periodical press during the last six months contains several cases in which the new practice has been successfully adopted as regards the mother. The principal of these, to which the references will be found below, are as follows: Two cases by Messrs. Wilkinson and Tennent; one by Mr. Greenhow; one by Mr. Jones, of Llanfair; one by Mr. Parker of Bridgewater; one by Mr. Walker, of Chesterfield (in

this case hemorrhage ceased as soon as the placenta was removed, but turning was subsequently necessary); two cases by Mr. Favell, of Sheffield, in which the placenta was spontaneously expelled without hemorrhage; one by Dr. Maclean; one by Mr. Hutchinson; one by by Mr. Hickings, in which he believes that the earlier abstraction of the placenta would have prevented the alarming hemorrhage which had occurred; and, lastly, one by Mr. Wells.

The subject of accidental uterine hemorrhage has been brought before the profession by Mr. Adams, of Banchory. The views of the writer as to the source of its hemorrhage are greatly at variance with generally received opinions, as will be seen from the following conclusions:

"1. That the doctrine generally taught, namely, that in floodings after delivery the blood escapes by exudation from the placental vessels of the uterus, is founded on a mistaken hypothesis regarding the construction of the placenta; while the symptoms of the case which were supposed to uphold the doctrine of uterine torpor, that is to say, the flaccidity of the womb when felt externally, and its distension and relaxation as discovered by the introduction of the hand, are to be regarded as the effects, and not the causes, of the flow of blood.

"2. That all the phenomena of the case are satisfactorily accounted for upon the supposition that the hemorrhage proceeds from lesions which are proved to be of no uncommon occurrence, about the uterus and perineum after delivery, but that analogy would lead to the conclusion that they sometimes proceed simply from violent action of the uterine exhalents.

"3. That there is no reason from analogy to suppose that blood would flow from an organ or member, merely because it is in a relaxed state, provided it had sustained no solution of continuity.

"4. That it has been demonstrably proved that contraction of the uterus is no safeguard against flooding, and that flooding is not necessarily the consequence of non-contraction after delivery.

"5. That the facts and circumstances connected with the Cæsarean operation, and the removal of the placenta in inertia of the womb, militate strongly against the established, opinion, that flooding is apt to arise from non-contraction, or sudden emptying of the womb.

"6. That, beyond all dispute, instrumental and precipitate

deliveries are those in which floodings are of the most frequent occurrence; and it is well ascertained that lacerations are common in both these cases.

"7. That the introduction of the hand into the uterus, with the intention of stimulating the organ, or compressing the bleeding point, is a practice highly dangerous, tending to produce increased determination of blood to the part, syncope, and convulsions; and that the only circumstance which could justify the most gentle modification of this practice is the existence of a coagulum in the vagina or womb.

"8. That, agreeably to my own experience, laying the head low, exposing the patient to a current of cool air, applying cold cloths to the parts, with small doses of opium and gentle compression of the abdomen, are means which will rarely fail to arrest the flow of blood; but that in extreme cases it may be warrantable to try to ascertain the situation of the bleeding point, and secure it by surgical means.

"9. That, as far as can be ascertained, fatal results under this mild system of treatment in former ages were of much more unfrequent occurrence than they have been under the harsh mode of treatment pursued for sometime past.

"Finally, that the flooding which follows delivery has none of the characters of a passive hemorrhage, as has been generally taught of late, but is to be referred to the class of active hemorrhages, and treated upon the principles applicable to them."—*Ibid.*

Cases in Obstetric Practice. By W. Franklin Barr, M. D., of Greenville, Tenn.—I. Dysmenorrhœa.—*A case cured with Extract Stramonium and Prussiate of Iron.*—I was called to see Mrs. G., a middle aged woman, the mother of seven children, spare make, and of laborious habit. I found her laboring under the following symptoms: Violent pain in the head; dry skin; pulse of natural size, but frequent; bowels constipated; tongue covered with white fur, with clean edges; pains in the back, hips, loins, thighs, and hypogastrium, resembling those of parturition—which were followed by profuse discharge, that would debilitate her very much, but which relieved her of pain until another paroxysm. Each discharge would be preceded by the pains mentioned above of a character, and which, in her own language, were "as

severe as those attending the birth of any child she ever had."

She had been laboring under this affection for eight or nine months; the catamenia returning at irregular periods of three or four weeks. During the first two or three menstrual periods, the discharge was accompanied with coagula, at the fourth with a pseudo-membranous substance, (according to her account,) "about the size of a placenta." Since then, no coagula or membranous substance has accompanied the discharges. Her general health was much impaired,—so much so that she had been unable to attend to her work for sometime. The lumbar vertebræ were tender on pressure; pubic region tender during menstrual period.

She had been under the attention of another physician—I being requested by him to visit her when I did, as he was unable to go himself. I found, from the medicine left by him that he was treating her for menorrhagia. He had given opium and acetate of lead, to be taken at each menstrual stage; and nothing in the *interval*. As this remedy relieved the pain and checked the discharges, I requested her to continue it—only leaving some purgative medicine, as her bowels were constipated, and recommended a blister to the lumbar vertebræ.

As the attending physician intended leaving the country, the case was placed in my care. To effect a cure, I prescribed Dewees' laxative pills to keep the bowels in a soluble condition, five grains of prussiate of iron three times a day, and four days previous to the return of the attack, one-fourth of a grain of the extract of strmonium, three times a day, until it produced vertigo, when it was to be discontinued until this subsided, when it was to be resumed. If the pains were severe on the return of the catamenia, 8 grains camphor and 4 grains pulv. Doveri, every two hours until relief was given. Flannel was directed to be worn next the skin. As there were symptoms of prolapsus uteri, directed recumbent position, injection decoction red oak bark, and the T bandage

The *first* return of the catamenia after using the above remedies was attended with no more pain than she had experienced before marriage, and no more than generally falls to the lot of females at this time. The symptoms of procedentia were also removed.

The remedies were continued for about four months, when

I ceased my attention. Her general health is now good, and she has become somewhat fleshy.

II. *Ergot in Uterine Hemorrhage.*—May 1st. I was called to see Mrs. C.—she had been laboring under uterine hemorrhage for a day. Her husband, being a physician, had prescribed for her himself. He had given ipecacuhana by itself, made applications to the vulva, &c. Her bowels had been operated upon by a cathartic. I prescribed opium, acetate of lead, and ipecac. in combination. This was continued for two days, but seemed to do but little good. I then prescribed ergot in doses of 10 grains every four hours. There was no return of the hemorrhage after the first dose had been given. She recovered without taking another dose. —*S. Med. & Surg. Jour.*

Laudanum in the Delirium occurring in the last stage of Dothinenteritis.—Dr. Morand, of Tours, is of opinion that great advantage may be derived from certain preparations of opium in the treatment of the delirium which supervenes in the last stage of the dothinenteritis. He relates a case of a girl 11 years of age, who, on the 32d day of an attack of dothinenteritis, seemed in the most hopeless condition. She had continued delirium, and screamed without cessation. A potion containing fifteen drops of laudunum was ordered to be given every hour, which quieted her cries, procured sleep, and in 18 hours the delirium ceased. The potion was afterwards continued for a few days to prevent a return of the delirium, and with a nourishing regimen the patient entirely recovered.—*Jour. de Méd.*—*Ibid.*

Report of the Committee of the New York State Medical Society concerning the National Medical Convention.—The Committee appointed at the last Annual Meeting of the New York State Medical Society, to carry into effect a resolution passed at the same meeting inviting a National Medical Convention, in May next, would respectfully report as follows:—

In the early part of last season the Committee, through their chairman, addressed a circular containing the preamble

and resolutions of the society, with such comments as were deemed advisable, to all the State medical societies and medical Colleges in the United States, as far as the existence of such societies and colleges could be ascertained. And in those States where neither State societies nor colleges existed, a circular was addressed to some leading member of the profession, inviting him to take measures for having his State represented in the proposed convention. Replies to these circulars and letters have been received from the following officers of medical societies and colleges, and private members of the profession, viz:

Drs. W. W. Morris, of Dover, Delaware State; A. H. Buchanan, of Tennessee; W. P. Johnston, of Washington city; T. T. Hewson, R. M. Huston, and W. E. Thorne, of Philadelphia; Luther Ticknor, Connecticut; W. H. McKee, of N. Carolina; E. H. Pearle, of Hanover; Paul F. Eve, of Georgia; J. H. Thompson, of New Jersey; J. W. Davis, of Indiana; A. Twitchell, of New Hampshire; John W. Draper, A. H. Stevens, Willard Parker, and C. A. Lee, of New York; J. Drake, of Ohio; Lawson, of Kentucky, and Carpenter, of Louisiana.

Delegates have been freely pledged from societies and colleges in Maine, New Hampshire, Connecticut, New Jersey, Delaware, District of Columbia, South Carolina, Georgia, Mississippi, Louisiana, Tennessee, Kentucky, Ohio, Indiana, and New York. The medical schools of Philadelphia are the only ones from which replies have been received, that decline sending delegates, and giving a hearty support to the proposed measure. Nearly every medical journal throughout the whole Union has not only favorably noticed, but warmly commended the holding of such a convention.

There are some institutions from whom no replies have been received; but, from information obtained from other sources, there is good reason for believing that most if not all these will appoint delegates as soon as they are fully assured that the convention *will* be held. It will thus be seen that in far the larger part of our Union, the invitation of this society has met with a prompt and hearty response from the profession; and it is with much regret that we find even a few institutions declining to take any part in so important a movement. But when we consider the wide extent of our territory, and the great number of our institutions, all engaged, we should hope, in a generous rivalry with each other, the expression in favor of a convention is certainly more

unanimous and more promising of good than could have been anticipated. Indeed the leading and influential members of the medical profession have long felt the necessity of some national action; some central point of influence around which the active and choice spirits of the whole profession can rally, and from which may be made radiate an elevating, healthful, and nationalizing influence over the whole country.

Hence, it only remains for this society to carry out the work it has so nobly commenced. The faculty in the New York University have very generously tendered to this society, the use of any room or rooms in their college edifice, that may be desired, for the convention to meet in. Some State societies and colleges have already appointed their delegates, while others have expressed a desire that the society would fix the number of delegates to be appointed by each society and college. For the purpose of furthering the objects in view, your committee would respectfully submit the following resolutions, viz:—

1st. *Resolved*, That the preamble and resolutions passed by this society, at its annual session, Feb. 6th, 1845, did not contemplate the appointment of delegates to the National Convention, by county or merely local societies, in those States where delegates *are* appointed by a regularly organized *State* society.

2d. *Resolved*, That as some societies and colleges have already appointed their delegates, therefore, the number to be appointed by any one of these institutions should be left entirely to the discretion of the appointing body.

3d. *Resolved*, That sixteen delegates be appointed to represent this society in the proposed National Convention, viz: two from each senatorial district in the State.

4th. *Resolved*, That this society accept the offer of the faculty in the New York University, respecting their rooms; and consequently that the members of said National Convention are invited to assemble in the college edifice of the New York University, at 10 o'clock, A.M., on the *first Tuesday* in May next.

5th. *Resolved*, That a committee of three be appointed to continue the efforts to further the objects of the proposed convention; and to exert all their influence to make it truly *National* in composition and action.

6th. *Resolved*, That the above Committee be authorized to invite the superintendents of lunatic asylums in the several States to attend the Convention.

7th. *Resolved*, That the committee be further authorized and enjoined to send a copy of this report, together with the action of this society thereon, to all the medical journals in the United States, with a request that they publish the same, on or before the 1st of April next.

W. S. Davis,
James McNaughton,
Peter Van Buren,
} Committee.

Albany, Feb. 3, 2846.

New York Jour. Med.

Animalcules in the Oil-Tubes of the Skin.—The following information may possibly be new to some of our readers:

"The animalcule of the skin," says Mr. Wilson, "is found in the oil-tubes, whenever there exists any disposition to the unnatural accumulation of their contents; it is found in number varying from one or two to twenty, in the interior of the little grooved cylinder, which is squeezed out by pressure of the fingers; and this in an apparently perfect state of the health of the skin, if it can be said to be in health when its functions are performed in a torpid manner. Now, as in the majority of mankind, and certainly in all the inhabitants of cities and large towns, the skin is more or less torpid in its functions, so the presence of this animal in the skin is the rule, its absence the exception; I have found it in all ages, from youth to old age, more numerously, it is true, at the latter than at the former period, and in great and remarkable numbers during sickness. Under these circumstances I see no other conclusion open, than to assume that it performs some beneficent purpose in the economy of the skin, that purpose being, according to my belief, the disintegration of the over-distended cells, and the stimulation of their tubes to perform their office more efficiently. In corroboration of this view, is the fact, that these little creatures increase in number when the vital powers decline, so that when the energies of the system are reduced by disease, and when the skin, participating in the reduction, is unable alone to fulfil its functions correctly, these little beings are produced to aid in the work."

The British and Foreign Review objects to the name *Entozoon Folliculorum*, by which Mr. Wilson designates this animal, and says that "it unites the characters of the higher annelida, or worm-tribe of the lower arachnida or spider-

tribe, and of the lower crustacea or crab-tribe, to such a degree, and it is yet doubtful which class ought to afford it a place. The investigator of the history of this parasite need certainly be in no lack of subjects for examination, for, strange to say, it is one of the most readily procurable of all living beings, especially in a town-population. Here, as elsewhere," continues the writer, "we see how nature manages to compensate one class for the exemption they may enjoy from the evils incident to another. The delicate town-bred lady of fashion, in ascending from her carriage, shrinks instinctively from the mass of rags, filth, and vermin, which is brought into contiguity with her precious person by some pertinacious beggar, ignorant all the while that her sebacious follicles give board and lodging to a host of parasites, whose number may equal that of the various kinds of 'small deer' that nestle in the matted hair and tattered garments of the fellow-being whom she regards with so much loathing.—'Where ignorance is bliss, 'tis folly to be wise.'"—*Ibid.*

Dr. Golding Bird on warm moist Air in Bronchial Inflammation.—Were I endeavoring to point out one class of cases more distressing and anxious than another, I would sketch one of pneumonia, or capillary bronchitis, affecting a part of both lungs, and occurring in a child barely emerging from the influence of the poison of measles or hooping cough. The little sufferer, weak from previous disease, tosses restlessly from side to side, with its head thrown back over the pillow or nurse's lap, to straighten the trachea, snatching short and imperfect slumbers, or rather moments of stupor, only to awaken to fresh distress; the livid hue of the finger-nails and toes, the dusky face, parched lips, distended and parting nostrils, the lustrous, prominent eye, present a graphic picture of impending suffocation; whilst the hurried respiration, the catching at the bed-clothes, or throwing the arms over the head, show the efforts made by the child to facilitate the distention of the obstructed lungs. If pneumonia be alone present, all these symptioms, it must be recollected, often exist without a particle of cough; the most severe cases of this kind I have met with, have been absolutely free from it, and have been often mistaken for mere fever. It must never, moreover, be forgotten, that whilst in the adult pneumonia is frequently limited to one lung, in children it usually affects both. The possible absence of violent inflammatory fever,

also, must never be forgotten, for ignorance of the fact has often caused the disease to be overlooked. The prominent symptoms of the most dreaded variety, or suffocative pneumonia, are, diminished oxygenation of the blood, and depressed state of the cerebral functions. The little patients are often affected with great somnolence, pale and livid complexion; the glowing heat of surface soon disappears, and is followed by cold and often violet-colored extremities. The respiration is often nearly entirely performed by aid of the abdominal muscles, the action of the diaphragm being violent; a state of things familiar to every physician, and to which attention has of late been especially directed by a German author, Dr. Berg. The distress of the little patient becomes much greater if capillary bronchitis, or inflammation of the lining membrane of the smaller tubes, be superadded; for here, in addition to the consolidation of the hepatized portion of the lung, the very route to the cells is first obstructed by the swollen and congested state of the lining membrane, and afterwards by the exudation of a stiff, viscid, gum-like mucus. And if the larger tubes become involved, as is usually the case after hooping cough, the loud and coarse râle, or hooping sounds, show how great is the effort required to expand the lungs.

In the treatment of these cases, all the therapeutical remedies at our command are too frequently put in requisition in vain; the mercury, antimony, opium and depletion, are all called upon for their assistance; and although, fortunately often with success, still we have sometimes to deplore their inefficiency, and even occasionally to doubt whether, after all, the disease has not been over-treated; and to inquire whether, in efforts to save, the catastrophe has not been rather accelerated than averted.

It is in these cases that I think we possess a most energetic remedial agent, in the shape of an appeal to the functions of the skin and mucous membrane of the air-passages, which, while its effects are always palliative, and often successful, can never be regarded as dangerous. Even the temporary relief afforded by the warm bath, familiar to all practitioners, shows how much is gained by calling upon the skin to do its duty. But even here, too carelessly as this remedy is often used, I think I have seen more ultimate harm than good accrue, by rendering the child more susceptible to the influence of the cold air which it inspires.

In cases of this kind I would urge the practitioner not to consider he has done his best towards saving his little patient,

until he has placed the child in an atmosphere, the temperature and moisture of which shall appeal to the skin, and relieve the inflamed tissue. The mode in which I am accustomed to effect this is as follows:

Selecting, if the choice be permitted, a bed-room as small and as free from draughts of air as possible, the windows are carefully closed, and if the casements do not fit accurately, strips of paper should be pasted over the junctures. A stout sheet or blanket should then be fastened with a nail or two to the lintel of the door, outside, so as to hang down and prevent currents of cold air from entering the room during the ingress and egress of the attendants, a large fire being lighted in the grate, which should never be allowed to go out during the treatment. A thermometer should be suspended over the patient's bed, so as to be about two or three feet from its centre, and carefully watched. The indications of this instrument must constitute the sole guide for raising or depressing the fire, and a temperature of from 70° to 78° should be constantly maintained. A large kettle of water is placed on the hob, and kept boiling, so that a current of steam may be constantly poured into the room from its spout, which, for this purpose, must be enlarged by the addition of a few feet of gas-pipe, and until this be procured, with a tube of stiff paper or thin mill-board.

By these precautions the room may, without the slightest difficulty, be kept at a nearly constant temperature for the requisite time. Indeed, it is remarkable how little variation is observed in the thermometric indications, when the most ordinary care is taken to prevent the entrance of long-continued draughts of air. Let us now suppose that a child, the subject of capillary bronchitis or pneumonia, be exposed to the influence of a bed-room arranged with these precautions, placed in bed, and supplied freely with diluents, as tea, toast-water, or common water, for which the little patients generally crave, and inquire what are the probable results of this treatment, independent of any other.—*London Lancet.*

THE WESTERN JOURNAL.

NEW SERIES.—VOL. V.—No. IV.

LOUISVILLE, APRIL 1, 1846.

COMMENCEMENT IN THE MEDICAL INSTITUTE.

At the eighth public Commencement in the Medical Insitute, held on the 9th of March last, the degree of Doctor of Medicine was conferred on seventy-three young gentlemen, who had undergone satisfactory examinations before the Faculty, and otherwise complied with the requirements of the institution. Of this number, twenty-one were from Kentucky, seventeen from Tennessee, eleven from Mississippi, and the remaining twenty-four from nearly half that number of States. Rarely, in our opinion, has a more gifted or promising body of young men gone forth from any of our medical schools than the last graduating class of the Institute. Many of them have given proofs of a strength and activity of mind, a ripeness of attainment, and a power of sustained application which betoken the happiest results. Every friend of sound medical learning will unite with us in the prayer, that these promises may be fulfilled, and that each succeeding class, in all our schools, may be an improvement upon all that have gone before.

The valedictory address to the graduates was delivered by Professor Miller, and was appropriate, judicious and eloquent. It inculcated in forcible language the code of ethics which must be observed in the professional intercourse of medical men, if they would have

peace among themselves, or enjoy the respect of society. It urged with especial emphasis the duty of the physician to respect the professional character of his brethren, and never by word, look, or action attempt to disturb the confidence reposed in them by their patients.

In the conclusion of his address, Professor Miller adverted to the new title which the Medical Institute is about to assume in becoming a department of the University of Louisville. This, he stated, was the completion of the design originally entertained by the founders of the school. From the beginning, it was purposed to establish other departments in connexion with the Institute, and embrace all under a common charter. The charter which was granted by the Legislature at its last session was drawn up by the friends of the medical school, and fully secures to it all its emoluments, property, and privileges. Its friends have cause to congratulate themselves that it is thus placed beyond the reach of any further agitation, and may pursue an uninterrupted career of prosperity and usefulness.

The *honorary* degree of Doctor of Medicine was at the same time conferred on Mr. JOSIAH GREGG, of Missouri, author of '*Commerce of the Prairies*,' on Dr. A. W. CHAPMAN, of Apalachicola, Florida; and on Dr. JOHN S. LEWRIGHT, of Kentucky.

ROBERT M. SPENCER, M. D., of Kentucky, a graduate of the Medical Department of Transylvania University, J. H. CREWS, M. D., of Ohio, a graduate of the Medical College of Ohio, and GEO. A. J. MAYFIELD, M.D., of Tennessee, a graduate of the University of Pennsylvania, were admitted to the "*ad eundem*" Degree in the Medical Institute.

ANALYSIS OF THE BOSTON WATERS.

Preparatory to supplying the city of Boston with pure water, steps have been taken by the commissioners in charge of the work to have the water of the various ponds and rivers in the neighborhood of the city subjected to a rigid chemical analysis. The report of Mr. B. Silliman, Jr., on these waters, a copy of which is before us, is a very able document, and must prove an invaluable guide to the commissioners. After giving the quantity of every foreign ingredient discovered in each of the waters, the author details the results of his

experments undertaken with the view of ascertaining their action upon leaden pipes. He found that *pure* water acted on the lead more than any other, which is in accordance with what chemists had oserved before, that saline matters protect lead to a great extent against the action of water. He observed also, that the water most abundant in carbonic acid, and which contained more than an average amount of solid matter, "had no effect whatever on the lead." These facts, as he states, "certainly appear anomalous, and lead to the conclusion that we are yet without the means of establishing any general rule by which we may judge whether any given water will act on lead; and that actual experience in every case is required before the question can be decided." His practical inference is, that, considering the deadly nature of lead poison, and the fact that the metal is dissolved by so many natural waters, "it is the course of safety to avoid, as far as possible, the use of lead pipes for conveying water which is to be used for drinking."

Mr. Silliman is devoting himself especially to analytical chemistry, in which useful walk of science he is already becoming distinguished.

MEDICAL OBEDIENCE.

So the introductory lecture of Professor Darrach, of the Pennsylvania Medical College, is entitled. Obedience to the command, "*Go heal the sick*," is the subject of his lecture—an earnest, poetical, pious discourse, written in a hurried conversational style, but full of statistics, anecdotes, and just reflections. We give a specimen: "On a visit of respect to Scarpa, in 1821, he told me that he had been constantly in the labor of his profession of 62 years, and that he still loved it. He was then at the age of 80 years, and had just published a folio volume of observations and recent experiments on the proper method of tying arteries. And, said he, in the course of conversation, at 18 years of age I, on a medical tour, was the means of introducing the use of the catheter from Paris into London, and the practice of dispensing with the charpee from London into Paris."

THE MEDICAL PROFESSION IN THE UNITED STATES.

The condition of the medical profession in this country, and the causes which tend to impede its progress, are topics very ably discussed by Dr. Stewart, of New York, in a pamphlet of 30 pages which we have read with deep interest. We cannot say we read it with pleasure, for a contemplation of the evils which beset the profession is calculated to inspire very different emotions. Still, it becomes us to look the evils in the face, and with a resolute spirit set about their correction. "Old sores," it has been said, "need vinegar as well as oil," and in that view of the case, Dr. Stewart has applied the corrosive. He compares, in the subjoined passage, the system of medical education in Europe with that which prevails in our country:

"All the more important subjects, and especially practical anatomy, and clinical medicine and surgery, are there thoroughly taught. The student is not only required to dissect, but is examined on Dissection, whereas, here a very irregular attendance on the dissecting-room, probably during a few evenings only in each session, is all that is expected of our pupils, and indeed, in some cases, they are notified publicly, beforehand, that though advised to do so, they will not be required to dissect in reality. Little or no attention to hospital practice is required from the student here. Some of our colleges exact from him that he shall purchase a ticket of admission to a hospital, when one is convenient, but there the matter rests. And this even is not always required; and if not obligatory on them to do so, how can it be expected that students, when they have so much else to attend to, will go to the expense of procuring a ticket, or after getting it, will take the trouble to attend the practice of these institutions? That they do not do so, is I think, very evident, from the fact that out of upwards of six hundred in attendance at the New York Colleges during the present session, only about one in eight have applied for the privilege of visiting our City Hospital! And yet this is known to be the only one here to which they can obtain access. The all important branch of clinical instruction then is not taught to students here, at all events in a satisfactory manner; for the cliniques attached to the schools in this city, in Philadelphia, and elsewhere, though useful, can never present to them the advantages that they would derive from examining patients, and following their treatment, in a regular and well organized hospital, and under the direction of qualified teachers."

Having exhibited the profession as it is, Dr. S. enumerates the causes which have brought it to its present condition, and are still opposed to its improvement. We would gladly copy from the discourse largely if we had space. Its ethics are of the purest order, and its admonitions and suggestions worthy of the serious regard of all American physicians.

RIDDELL ON THE CONSTITUTION OF MATTER.

This is the subject of a learned article in the New Orleans Journal of Medicine, for March, which has been issued in pamphlet form. It is not a subject to interest the majority of readers, but a few, it is to be hoped, will meet with it, who can do justice to the recondite speculations of the author. He has ventured to set up opinions at variance with some of the received doctrines of natural science, and sustains them by an imposing array of arguments, but whether conclusively or not we leave to others more versed in mathematical science than ourselves to decide. The conclusion of Dr. Riddell's paper is beautiful, and we take great pleasure in quoting it:

"Deeply impressed with the conviction, that all the current physical phenomena of the universe are but rational and regular sequences from rational and regular causes, I have discarded the idea of occult and inherent qualities. Where the relation of things seams occult and incomprehensible, I have uniformly ventured to infer that they merely seem so, because the true and essential relations have not yet been developed. When we look abroad into the workings of nature, few, comparatively, are the physical objects and relations which we truly comprehend: and countless, those which to us are dim and distant forms; admonishing us of our weakness, and of our infinitely small importance in the grand system of the universe. But let us not despair. For since we see that neither matter nor motion admits of natural annihilation, but that both possess the passive attributes of endless perpetuity; let us exult in the firm conviction, which by parity of reason forces itself upon us, that the gift of the Divine Being also,—that more subtle portion of ourselves which thinks, remembers and reasons, is destined to immortality."

NATIONAL MEDICAL CONVENTION.

We exceedingly regret to see that there is not likely to be a full representation of the medical schools of the country at the proposed convention in May. The schools of Philadelphia, it is announced, have declined sending delegates. Professor Caldwell was appointed to represent the Medical Institute of Louisville, but we are sorry to learn from him that he will not be able to attend. It is greatly to be wished that there could be a general attendance from every quarter of the Union. Good could not fail to grow out of such a convention, and we still hope that the assemblage will be large.

THE NATURALIST.

This is the name of a periodical issued from Franklin College, near Nashville, Tennessee, by the Faculty of the College. The January number has appeared, and contains papers by Professors Loomis, Fanning, Fowler, and Eichbaum. It is to be published in monthly numbers of 48 pages, at $2 in advance, $2 50 if payment be delayed over three months, and $3 if delayed over six months. We tender to the editors our best wishes for the success of their enterprize, and run no risk in promising that its patrons will find it an instructive and valuable journal. We hope it will be sustained.

HYPOTHESES IN MEDICINE.

It is the fashion in our day to condemn hypothesis in medicine, and insist upon facts, as all in all. But have we, in reality, discarded hypothesis? Is there any thinking man who has not his hypothesis? A very distinguished statesman, who is also a farmer, once remarked to us that, although he was distrustful of theories, he had a theory that "dun mares produced larger mule colts than those of any other color." This was his hypothesis, founded on a certain number of observations, and whether true or not, observation must decide. Sir Isaac Newton, driven by the plague from London, and sitting in a garden, fell into a train of speculation on the power of gravity, the result of which was a conjecture that the same force

which brought the falling apple to the ground reached to the moon, and kept her in her orbit. This was his hypothesis, distrusted long by himself, and not rendered certain by calculations until it had occupied his great mind for sixteen years. And so, had not Columbus his hypothesis when he set sail in search of the new world? Lavoisier conjectured that soda and potash were, at bottom, metals; and this became the hypothesis of Davy, who made it something more by his famous feat with the galvanic battery. Newton seeing that the diamond, like unctuous bodies, refracted the rays of light powerfully, conceived the thought that, like those bodies, diamond contained something which was combustible; and Lavoisier embracing the hypothesis converted it into positive knowledge by the experiment of burning the precious gem in oxygen gas. But are hypotheses native to great minds alone? Do we not all daily act upon them?

The practitioner is called to the bed-side of a patient; he notes the phenomena of his case, and concludes, after the best investigation he can give it, that it is chronic hepatitis; and upon this hypothesis he bases his therapeutics. If the result prove favorable to his hypothesis he is strengthened in the conviction of its truth; and if he have a number of patients with a similar aggregate of symptoms, who recover under the same treatment, he becomes at last wedded to his hypothesis.

But this is not what is generally understood by hypothesis.—"Whatever is not deduced from the phenomena, is to be termed hythesis;" these are the words of Newton; and in this sense, it is of hypothesis as of treason—

> "Treason does never prosper—what's the reason?
> Why, when it prospers none dare call it treason."

These lines are quoted by Dr. Bigelow in an address delivered before the Boylston Medical Society of Harvard University, which we have read with unusual pleasure. The subject of the address is "Medical Science and Medical Art," and among the topics handled by the writer with much originality is the one upon which we have bestowed the few foregoing remarks. Dr. Bigelow holds that many, if not all great discoveries in science, like those of Newton, Columbus, and Davy, 'have been preconceived before they were demonstrated.' The perversion of this is the framing of an hypothesis, and then

bending facts to sustain it. This is an abuse of facts and of reason. Facts, as he correctly observes, "are to test, to prove or disprove, not to confirm theory." And, as he continues, "the error of former science, the error of recent medicine, was not that hypotheses were made, but that they were constructed to be proved; that truth was warped and misapplied; that facts were prostituted in the cause of ignorance and prejudice." Cullen framed his theory of fever, and from that time forth held all those "facts" to be "false" which did not conform to it. Hahnemann saw in medical experience a few instances giving countenance to the law—*similia similibus curantur*, and homœopathy became his hypothesis, to which all facts were made to bend. Many more cases of the same sort might easily be cited.

Assuredly facts are not to be undervalued, for a large proportion of medical science consists of facts wholly unexplained. But we agree with Dr. Bigelow, that "facts are not the end of science;" and that "medical discovery has generally been the work of individuals, who had their hypotheses and have analyzed facts in some especial relations, and not of societies, who have collected them indiscriminately." It was upon this path that Jenner marched in his great discovery; and albeit, slowly, and with opposition, and sneers enough from his companions, for they threatened to expel him from their medical society, if he continued to harass them with the disgusting subject of vaccination.

TO CORRESPONDENTS.

We have received communications from Drs. Gordon, Fee, and Boling which will appear in our next number.

BOOKS RECEIVED.

We are indebted to the publishers for the second volume of Velpeau's great work on Surgery. An extended review of it will be prepared for an early number. We have also received a neat volume entitled a "Compendium of Chapman's Practice," which we shall sieze the first leisure hour to notice under the proper head.

THE

WESTERN JOURNAL

OF

MEDICINE AND SURGERY.

MAY, 1846.

ART. I.—*An Essay on Diet in Health and Disease.* By JOHN DAWSON, M. D., of Jamestown, Ohio.

[CONTINUED.]

DIET PROPER IN THE TREATMENT OF SEVERAL DISEASES.

To every one of any observation, the influence of a proper regimen in correcting aberrations from the common standard of health is very apparent. The physician is able to trace no small portion of his success, in the treatment of many diseases, to a proper regulation of the things designed for the purposes of nourishment; and the valetudinary may often rest his only hope of being delivered from his mental and bodily torture upon a strict observance of the rules of an enlightened system of regimen. But as these topics are fully discussed in our elementary works on hygiene, it is our intention to allude to them merely in connexion with recent